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# TRANSCRIPT OF RECORD

## Supreme Court of the United States

OCTOBER TERM, 1936

## No. 35

SAMUEL B. SMITH, PETITIONER,

*vs.*

A. B. HALL AND L. C. HALL, D. B. A. HALL BROTHERS

ON WRIT OF CERTIORARI TO THE UNITED STATES CIRCUIT COURT OF APPEALS FOR THE SECOND CIRCUIT

PETITION FOR CERTIORARI FILED APRIL 21, 1936.

CERTIORARI GRANTED MAY 25, 1936.

# SUPREME COURT OF THE UNITED STATES

## OCTOBER TERM, 1936.

# No. 35.

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SAMUEL B. SMITH, PETITIONER,

*vs.*

A. B. HALL AND L. C. HALL, D. B. A. HALL BROTHERS

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ON WRIT OF CERTIORARI TO THE UNITED STATES CIRCUIT COURT OF APPEALS FOR THE SECOND CIRCUIT

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JUDD & DETWEILER (INC.), PRINTERS, WASHINGTON, D. C., JULY 14, 1936.

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[fol. 1]

IN UNITED STATES DISTRICT COURT, DISTRICT OF CONNECTICUT

Equity. No. 2369

SAMUEL B. SMITH

vs.

A. B. HALL and L. C. HALL, d. b. a. HALL BROTHERS.

DOCKET ENTRIES

1934.

July 18. Bill of complaint alleging infringement of Letters Patent No. 1,262,860 filed.

" 18. Subpoena issued and with two copies of bill of complaint handed to the Marshal for service.

" 18. Report to commissioner of patents.

" 20. Subpoena returned showing service.

Aug. 8. Answer of defendants filed and copy sent to Rockwell & Bartholow, Attorneys for plaintiff.

1935.

Jan. 23. Order and motion for preliminary injunction filed and entered and with two copies of same handed to the marshall for service.

" 29. Order and motion for preliminary injunction returned showing service.

Feb. 18. Defendant's joinder of issue on motion of Plaintiff and order thereon for preliminary injunction vs. Defendants filed. Copies of briefs received and filed.

" 25. Brief for plaintiff upon motion for preliminary injunction filed and handed to Judge Hincks, with affidavit of Joseph I. Taggert.

[fol. 2]

Feb. 27. Hearing had re. preliminary injunction. Two witnesses were sworn and testified on behalf of defendants. Exhibits A and B were filed by defendants. Exhibits C, D, and E were marked for identification. One witness was sworn and testified for plaintiff. Witness Taggert was recalled.

DOCKET ENTRIES—Continued

1935.

Feb. 27. Arguments were heard and memorandum was filed by Attorney for defendant. The Court ordered orally that injunction issue forthwith and scope or decree to be agreed upon by counsel and submitted. Supersedeas bond of $25,000.00 to be filed by defendant on or before March 4, 1935.

" 28. Findings of fact filed.

" 28. Decree filed and entered. (Hincks, J.)

" 28. Injunction issued and with two certified copies of same handed to the Marshal for service.

Mar. 5. Injunction returned showing service.

" 2. Injunction bond in the sum of $25,000.00 filed.

" 26. Transcript of testimony filed.

Apr. 4. Motion of George D. Seymour for disappearance and order allowing same filed and entered. (Hincks, J.)

May 6. Motion to amend defendants' answer filed.

" 6. Amended answer of defendants filed.

" 8. Specification under Rule 1 filed.

" 13. Order granting motion to amend answer filed and entered. (Hincks, J.)

" 31. Stipulation filed.

June 5. Stipulation regarding taking testimony filed.

[fol. 3]

June 10. Request for subpoena filed and subpoena issued.

" 10. Defendants' motion for leave to take deposition of Reese V. Hicks and affidavit of Arthur E. Paige filed.

" 13. Memorandum of decision and order on defendants' motion for leave to take the deposition of Reese V. Hicks, filed and entered. (Hincks, J.) Copies mailed to attorneys of record.

" 17. Subpoena for A. B. Hall returned showing service.

" 17. Hearing had on motion for preliminary injunction. One witness was sworn and testified on behalf of plaintiff. Plaintiff's exhibits 18 to 32, inclusive, were filed. One witness was sworn and testified for the plaintiff. Four witnesses

1935.

were sworn and testified for the defendants. Witness Hastings was recalled. Defendants' exhibits F and G were filed. Defendant rests. Arguments were heard. Briefs to be filed and reply briefs if desired.

July 1. Brief on behalf of plaintiff filed and handed to Judge Hincks. Copy of same mailed to Arthur E. Paige, Esq.

" 1. Brief for defendants filed and handed to Judge Hincks.

" 1. Exhibits H and I were filed and handed to Judge Hincks.

" 4. Corrections of report of the trial proceedings, etc., filed.

" 8. Supplemental brief for defendants filed and handed to Judge Hincks.

" 8. Reply brief on behalf of plaintiff filed and handed to Judge Hincks.

[fol. 4]

July 11. Corrections of report of the Trial Proceedings, etc., filed.

" 15. Letter from Arthur E. Paige, dated July 13, 1935, showing acceptance of some corrections of report of trial proceedings, etc., and excepting others, filed.

" 18. Opinion filed. (Hincks, J.)

" 27. Exceptions by plaintiff filed (re paragraph 7 of finding of fact).

Aug. 12. Decree filed and entered and Attorney Arthur E. Paige notified. (Hincks, J.)

" 14. Petition for appeal filed.

" 14. Assignment of errors filed.

" 14. Statement of testimony under Rule 75b filed.

" 14. Bond on appeal filed.

" 14. Praecipe filed.

" 15. Order allowing appeal filed and entered. (Hincks, J.)

" 15. Notice filed.

DOCKET ENTRIES—Continued

1935.

Aug. 15. Citation issued returnable thirty days from August 14, 1935, and with a copy of same mailed to Rockwell & Bartholow.

" 17. Citation returned showing service.

Sept. 4. Stipulation re. item 13 of praecipe filed.

" 4. Stipulation and statement of testimony under Rule 75b and certificate thereon by Judge Hincks filed and entered.

" 12. Order extending time for appeal papers filed and entered. (Hincks, J.)

" 12. Order for removal of exhibits filed and entered. (Hincks, J.)

[fol. 5] IN UNITED STATES DISTRICT COURT, DISTRICT OF CONNECTICUT

In Equity. No. 2369

SAMUEL B. SMITH, Plaintiff,

vs.

A. B. HALL and L. C. HALL, d. b. a. HALL BROTHERS, Defendants

BILL OF COMPLAINT

To the Honorable the Judges of the United States District Court for the District of Connecticut:

Plaintiff, for his bill of complaint, represents and states as follows:

I

That the plaintiff, Samuel B. Smith, is a citizen of the United States and a resident of Cleveland, Ohio.

II

Upon information and belief that the defendants, A. B. Hall and L. C. Hall, are residents of the City of Wallingford, New Haven County, within the District of Connecticut, at which place they are engaged in and doing business in the hatching of eggs under the name and style of Hall [fol. 6] Brothers, and wherein the acts of infringement hereinafter complained of were and are being committed.

III

That the jurisdiction of this court depends upon the fact that this is a suit in equity arising under and based upon the patent laws of the United States.

IV

That prior to October 26, 1916, the plaintiff, Samuel B. Smith, was the first, original and sole inventor of certain new and useful improvements in Incubators, not known or used by others before his invention or discovery thereof, not patented or described in any printed publication in this or any foreign country prior to his invention thereof or more than two years prior to October 26, 1916, not in public use or on sale in this country for more than two years prior to said date, not abandoned, and not patented by Samuel B. Smith or his legal representatives or assigns upon an application filed more than twelve months prior to said date.

V

That on October 26, 1916, the plaintiff, Samuel B. Smith, filed in the United States Patent Office an application for Letters Patent of the United States for said improvement in Incubators.

VI

That prior to April 16, 1918, Samuel B. Smith assigned the right, title and interest in and to the said invention and [fol. 7] in and to any United States patent to issue thereon to The Buckeye Incubator Company, a corporation of Ohio, and that after due proceedings upon the said application for patent there was issued to The Buckeye Incubator Company, aforesaid, United States Letters Patent No. 1,262,860 on April 16, 1918, whereby the exclusive right of making, using and selling the said invention and improvements throughout the United States for the term of said patent was granted to The Buckeye Incubator Company, aforesaid, its successors or assigns, as will more fully appear from the original or duly certified copies of the said patent and assignment to be produced in court herein.

VII

That under date of April 29, 1927, The Buckeye Incubator Company, aforesaid, being then the owner of the title in

and to the aforesaid Letters Patent, did sell, assign and transfer to the plaintiff, Samuel B. Smith, his heirs and assigns, the right, title and interest in and to the said Letters Patent as will more fully appear from the original assignment or duly certified copy thereof to be produced in court herein.

VIII

That the plaintiff and his predecessor in title, The Buckeye Incubator Company, have been at all times the sole and exclusive owners of the said patent.

IX

That the said patented invention has proven to be of very [fol. 8] great value, and the plaintiff has expended large sums of money in the manufacture and sale of incubators embodying the invention thereof. The incubators so manufactured and sold have acquired a high reputation and utility and have proven to possess superior functions and qualities over other incubators, and have been in great demand due to the new and useful invention made by the plaintiff in the art of incubating eggs.

X

That the patent in suit has been adjudicated in a large number of suits brought thereon, and has been unanimously held valid in such cases by the Circuit Courts of Appeals of the Third, Sixth, Eighth and Ninth Circuits as will more fully appear by reference to the decisions in the said Courts.

XI

That in a case decided April 9, 1934, in the Circuit Court of Appeals of the Ninth Circuit, known as Herbert H. Waxham, Appellant v. Samuel B. Smith, Appellee, the said patent was declared valid as aforesaid, and Claim 1 of the said patent held to be infringed by the incubator involved in such case, as will more fully appear from said decision which is reported in 70 F. (2d) 457; and that the incubator involved in such suit was and is known as "Robbins No. 23 Incubator."

XII

Upon information and belief, that the said defendants A. B. Hall and L. C. Hall, prior to and within six years of [fol. 9] the filing of the bill of complaint herein, were in possession of, and using in the incubating of eggs at their place of business at Wallingford, New Haven County, Connecticut, one or more Robbins Incubators, the same, or similar to that found to be an infringement of Claim 1 of said patent in the case of Waxham v. Smith referred to above, which unauthorized use constitutes an infringement of said patent No. 1,262,860, and particularly Claim 1 thereof, and are threatening to continue to use such incubator or incubators, thereby infringing upon the rights of the plaintiff as secured by said patent, all without the license or consent of plaintiff.

XIII

That incubators manufactured and sold by the plaintiff have been marked "Patented" together with the date and number of the patent aforesaid, as required by the Statutes of the United States, and that in addition the defendants herein have been duly notified in writing of the patent aforesaid and of their infringement thereof.

XIV

That by reason of the infringement complained of herein, plaintiff has suffered, and is suffering, immediate and irreparable damage and injury, and is without an adequate remedy at law, and will continue to suffer such irreparable damage and injury unless the defendants are restrained by an order of this Court from said infringing acts; that the defendants have realized profits and gains in connection with the infringing acts complained of herein, which of [fol. 10] right belong to this plaintiff and of which plaintiff prays discovery.

Wherefore the plaintiff prays:

1. That a writ of subpoena may issue out of this Court directed to the defendants, A. B. Hall and L. C. Hall, commanding them to appear and answer all and singular the matters and things herein complained of, but not under oath, an answer under oath being expressly waived.

2. That temporary and permanent injunctions be issued out of this Court addressed to the defendants, A. B. Hall and L. C. Hall, and their workmen, employees, solicitors, agents, attorneys and others claiming or holding under the defendants, enjoining and restraining them from in any manner directly or indirectly infringing upon the patent sued upon herein.

3. That the defendants be required to account for and pay to the plaintiff all the gains and profits acquired by them and recompense the plaintiff for the damages sustained by the plaintiff by reason of the infringement complained of herein.

4. That the defendants pay the costs of this suit, and that such other, further and equitable relief be granted to the plaintiff as shall be found necessary or proper.

Samuel B. Smith, by Rockwell & Bartholow, His Attorneys and Solicitors. Edmond M. Bartholow, A. C. Ely, Ely & Barrow, of Counsel.

[fol. 11] *Duly sworn to by Samuel B. Smith. Jurat omitted in printing.*

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[fol. 12] IN UNITED STATES DISTRICT COURT

[Title omitted]

ANSWER

Comes now the defendants above named, and, each answering the bill of complaint of plaintiff herein, and reserving all right of exception and objection to the many uncertainties and inaccuracies in said bill of complaint, avers and says:

I

Admits that the plaintiff, Samuel B. Smith, is a citizen of the United States and a resident of Cleveland, Ohio.

II

Answering paragraph II, defendants admit that their residence and place of business is at Wallingford, Connecti-

cut, but deny that they or either of them have or has committed any act of infringement there or at all.

III

Admits that if this Court has jurisdiction, it has same because of the fact that this is a suit in equity alleged to [fol. 13] arise under and based upon the patent laws of the United States.

IV

Denies that prior to October 26, 1916, or at any time, the plaintiff, Samuel B. Smith, was the first, original and sole or any inventor of certain new or useful improvements in incubators, or that the same was not known or used by others before his pretended invention or discovery thereof, or that the same was not patented or described in any printed publication in this or any foreign country prior to his alleged invention thereof or more than two years prior to October 26, 1916, or not in public use or on sale in this country for more than two years prior to said date or not abandoned, or not patented by Samuel B. Smith or his legal representatives or assigns upon an application filed more than twelve months prior to said date.

V

Defendant further denies that on October 26, 1916, the plaintiff, Samuel B. Smith, filed in the United States Patent Office an application for letters patent of the United States for said improvement in incubators.

VI

Defendant denies that prior to April 16, 1918, or at any time, or at all, Samuel B. Smith assigned the right, title or interest in or to the said invention or in or to any United States patent to issue thereon to the Buckeye Incubator Company, a corporation of Ohio, or that after due proceedings upon the said application for patent there were issued [fol. 14] to the Buckeye Incubator Company aforesaid U. S. Letters Patent No. 1,262,860, on April 16, 1918, but admits that Letters Patent of said number and date were issued, and defendant denies that the exclusive or any right of

making, using or selling the said invention or improvements throughout the United States for the term of said patent was granted to the Buckeye Incubator Company, or its successors or assigns, or that the same more fully or at all could or would appear from the pretended original or duly certified copies of the said patent and assignment, were same to be produced in court herein; and thereunto and as to each part of the allegations of said paragraph VI of the bill of complaint other than in this paragraph admitted, defendant calls upon plaintiff for strict proof thereof.

VII

Denies that under the date of April 29, 1927, or at any time, or at all, the Buckeye Incubator Company, if it were then the owner of the title in and to the aforesaid letters patent, and which defendant denies, did sell, assign and transfer to the plaintiff, Samuel B. Smith, or his heirs or assigns, the right, title or interest in or to the said letters patent as would or could more fully or at all appear from any original assignment or duly certified copy thereof which might be produced in court herein.

VIII

Denies that plaintiff or his alleged predecessor in title, the Buckeye Incubator Company, has been at all times or at any time the sole and exclusive owner of the said patent.

[fol. 15]

IX

Denies that the said patented invention, if such there be, has proven to be of very great or any value; or that plaintiff has expended large sums of money in the manufacture and sale of incubators embodying the invention thereof; or that the incubators so manufactured or sold have acquired a high reputation or utility or have proven to possess superior functions or qualities over other incubators, and alleges upon the contrary that the incubators as manufactured and sold by plaintiff have proven to be inferior to other incubators; and denies that the said patent has been widely recognized or respected, but on the contrary alleges and avers that the said patent has been very uniformly ignored and but rarely recognized or respected, and that the courts have repeatedly found the same not to be

infringed in actions for infringement instituted under said patent; and defendant admits that said patent was held valid and infringed by the Circuit Court of Appeals for the Ninth Circuit in the case of Robert (Herbert) H. Waxham, Appellant vs. Samuel B. Smith, et al., Appellees, No. 7154, in a decision dated April 9, 1934, as will more fully and at large appear by reference to said decision, but defendant avers and alleges that three days thereafter, to wit, April 12, 1934, said patent was held not infringed by the Circuit Court of Appeals of the Eighth Circuit in the case of E. H. Snow and E. H. Snow doing business as Snow's Hatcheries and Snow Incubator Company, Appellant vs. Samuel B. Smith, Appellee, No. 9757, as will more fully and at large appear by reference to said decision, and has also been [fol. 16] repeatedly held not infringed in various decisions in the Third and Sixth Judicial Circuits, as will more fully and at large appear by reference to said decisions, and as to which plaintiff is fully advised; and defendant further alleges and avers that a petition for certiorari in said case No. 7154 (Waxham, Appellant vs. Smith, et al., Appellees) was duly filed in the Supreme Court of the United States on or about July 23rd, 1934, and is now pending in said Court.

X

Defendant is not informed, save by the bill of complaint, as to the allegations of paragraph XIII thereof, as to the marking of incubators manufactured or sold by plaintiff, and, therefore, denies same, but admits that defendant has been notified in writing of the patent aforesaid and of its alleged infringement thereof.

XI

Defendant denies that defendant, prior to or within six years of the filing of the bill of complaint or at any time or in any manner, was in the possession of or was using in the hatching of eggs, at a place of business in Fontana, California, or elsewhere, incubators embodying or operating in accordance with the pretended invention of said patent No. 1,262,860, or particularly claim 1 thereof, or any claim thereof, or is threatening to continue use of such incubator or incubators, or that any such use of such incubator or incubators did or could or can infringe upon the pretended

[fol. 17] rights of the plaintiff as secured by said patent or alleged to be secured thereby, or that the same was without the license or consent of the plaintiff; and on the contrary, defendant specifically alleges that such incubator or incubators as it had in its possession or was using was in all respects and particulars totally different and distinct in construction and mode of operation and method of use from any incubator disclosed or described or claimed in said pretended letters patent No. 1,262,860, and operated in part or in whole, rather, in accordance with the description and disclosure and claims of Reissue Letters Patent No. 18,984, dated October [redacted] 1933, granted to John L. Robbins, of Edgewater, Colorado, for Incubator, upon surrender of original Letters Patent No. 1,728,980, dated September 24, 1929, and of said original letters patent, and which said reissue letters patent and original letters patent teach and claim an entirely different invention and construction and mode of operation or method of use than that purported to be set forth and claimed in said patent No. 1,262,860, and which separate invention was discovered and produced by said John L. Robbins long after the issuance of said patent No. 1,262,860, and entirely independently of the teaching of the latter, and is in no way servient thereto; whereby defendant is partially or entirely justified under said Robbins reissue patent.

XII

Defendant denies that by reason of the pretended infringement complained of in the bill of complaint, plaintiff [fol. 18] has suffered or could suffer or is suffering immediate or irreparable or any damage or injury or is without an adequate remedy at law, or will continue to suffer any irreparable or any damage or injury unless the defendant be restrained by an order of this court from said alleged infringing acts, and defendant denies specifically that it has committed any infringing act or acts; and defendant denies that defendant has realized profits or gains in connection with any alleged infringing acts complained of in said bill of complaint, or which of right or at all belong to plaintiff and as to which plaintiff prays discovery, and denies the right of plaintiff to any such discovery.

XIII

As a further, additional, separate or alternative defense, defendant alleges and avers that the subject-matter of said patent No. 1,262,860 and of claim 1 and each method claim thereof consists of and constitutes the mere function, and only the function, of the apparatus or mechanism or thing disclosed and described in said patent, and that said claim 1 and each such method claim is and are, therefore, void for functionality.

XIV

As a further, additional, separate or alternative defense, defendant alleges and avers that the subject-matter of said patent No. 1,262,860, and of said claim 1 and each of the claims thereof, constitutes a mere aggregation of old steps and parts and devices, and of steps and parts and devices [fol. 19] that are not combinative in character and interrelation and nature, and that said letters patent and each claim thereof are, therefore, void for aggregation.

XV

As a further, additional, separate or alternative defense, defendant alleges and avers that the subject-matter of said patent No. 1,262,860, and each and every of the claims thereof, was not novel or patentable at the time of the alleged invention thereof by said Samuel B. Smith, as alleged in said bill of complaint; but that said letters patent No. 1,262,860, and each and every of the claims thereof, is and are invalid and void for the reason that the subject-matter and all material and substantial parts thereof had been, prior to the alleged invention or discovery thereof by Samuel B. Smith, or more than two years prior to his application for said letters patent, known, used, invented, published and shown, and publicly known, used and invented and described and published and contained in and by the following U. S. Letters Patent and publications, and invented and known and published by the patentees thereof, at the places of residence thereof as set forth in the following U. S. and foreign letters patent, and other publications and elsewhere, and at and before and after the dates of application appearing upon the following letters patent, whereby said patent No. 1,262,860 is wholly void for want of novelty or invention, to wit:

## United States Patents

| Number | Date | Name |
|---|---|---|
| 3,019 | March 30, 1843 | N. E. Guerin |
| 120,253 | Oct. 24, 1871 | H. Endemann |
| [fol. 20] | | |
| 152,644 | June 30, 1874 | E. A. and C. W. Jones |
| 272,744 | Feb. 20, 1883 | A. H. Morgan |
| 240,004 | April 12, 1881 | P. H. Bate |
| 286,756 | Oct. 16, 1883 | C. F. Winkler |
| 297,676 | April 29, 1884 | G. Conant |
| 320,463 | June 23, 1885 | L. Cutting |
| 330,457 | Nov. 17, 1885 | C. Bassini & A. Heyden |
| 344,474 | June 29, 1886 | J. W. Campbell |
| 559,676 | May 5, 1896 | T. R. C. Christianson |
| 591,870 | Oct. 19, 1897 | F. H. Morgan |
| 410,110 | Aug. 27, 1889 | J. H. Knowles & J. K. Proctor |
| 432,282 | July 15, 1890 | J. K. Proctor & J. H. Knowles |
| 535,175 | March 5, 1895 | C. W. Schwartz, Jr. |
| 553,723 | Jan. 28, 1896 | J. K. Proctor |
| 11,460 | Dec. 25, 1894 | Reissue patent to J. K. Proctor |
| 691,837 | Jan. 28, 1902 | V. S. Bell |
| 709,650 | Sept. 23, 1902 | O. P. Scott |
| 725,079 | April 14, 1903 | G. C. Hawkins |
| 745,458 | Dec. 1, 1903 | F. C. Perkins |
| 828,181 | Aug. 7, 1906 | G. H. Boyd |
| 798,697 | Sept. 5, 1905 | F. C. Perkins |
| 886,325 | April 28, 1908 | E. F. Osborne |
| 891,019 | June 16, 1908 | L. Verna |
| 916,454 | March 30, 1909 | V. C. Koons |
| 916,273 | March 23, 1909 | A. C. Coons |
| 949,653 | Feb. 15, 1910 | J. H. Klinke |
| 1,100,146 | June 16, 1914 | J. O. Olson |
| 1,137,752 | May 4, 1915 | G. E. Goldstein |
| 1,160,793 | Nov. 16, 1915 | S. S. Van Keuren |
| 1,165,958 | Dec. 28, 1915 | Thos. B. Freas |
| 1,205,445 | Nov. 21, 1916 | R. F. Fullington |
| 193,616 | July 31, 1877 | E. S. Renwick |
| [fol. 21] | | |
| 217,148 | Feb. 3, 1880 | E. S. Renwick |
| 271,184 | Jan. 23, 1883 | H. Altenbrand |

United States Patents—Continued

| Number | Date | Name |
|---|---|---|
| 280,490 | July 3, 1883 | G. Lumpp |
| 335,961 | Feb. 9, 1886 | E. S. Benwick |
| 426,321 | Apr. 22, 1890 | J. K. Proctor & J. H. Knowles |
| 456,407 | July 21, 1891 | F. Frey & A. M. Wayne |
| 586,088 | July 6, 1897 | W. P. Jones |
| 599,145 | Feb. 15, 1898 | George Kutz |
| 614,493 | Nov. 22, 1898 | G. S. Newsom |
| 789,719 | May 16, 1905 | J. M. Day |
| 832,151 | Oct. 2, 1906 | C. S. Newsom |
| 992,622 | May 16, 1911 | J. Wiebe |
| 1,010,809 | Dec. 5, 1911 | J. Schmidt & H. Schutterle |
| 1,034,205 | July 30, 1912 | J. C. Cogburn |
| 1,075,747 | Oct. 14, 1913 | C. W. Zimmer |
| 1,086,903 | Feb. 10, 1914 | A. Di Domenica and A. Amicarelli |
| 1,158,447 | Nov. 2, 1915 | C. J. Coleman |
| 1,195,705 | Aug. 22, 1916 | P. S. Martin |
| 360,223 | Mar. 29, 1887 | E. H. Johnson |
| 843,909 | Feb. 12, 1907 | F. M. Peters & H. H. Hungerford |
| 917,483 | Apr. 6, 1909 | C. C. Peck |
| 946,911 | Jan. 18, 1910 | G. C. Andrews |

Foreign Patents

| | | | |
|---|---|---|---|
| 155,917 | (German) | Nov. 7, 1901 | E. Stulik |
| 117,089 | " | Feb. 4, 1901 | Mann |

Publications

A book by Milo M. Hastings (pages 104-105), entitled "The Dollar Hen", published by the Arcadia Press, N. Y., [fol. 22] 1909. A copy is in the Public Library in New York, N. Y.

An article entitled "Indoor Chicken Factories", published in the Boston Sunday Globe, of Boston, Mass., issue of November 10, 1912. A copy is in the office of the Boston Globe, at Boston, Mass.

An article entitled "Hatching Chickens by Wholesale", published in the Technical World, at Chicago, Illinois, in the issue of April, 1913, (pages 248-249). A copy is in the Public Library, New York, N. Y.

An article entitled "Incubator" appearing on pages 652-653 of Ure's Dictionary of Arts, Manufactures and Mines, published in London, England, by Longmans, Green & Co., in 1867. A copy is in the Public Library at Minneapolis, Minnesota.

An article entitled "Incubator", appearing on pages 1177 and 1178 of Knight's American Mechanical Dictionary, Vol. II, published at Boston, Mass., by Houghton, Mifflin & Company, in 1884.

An article entitled "Ventilator", appearing on pages 2704 and 2705 of Knight's American Mechanical Dictionary, Vol. III, published at Boston, Mass., by Houghton, Mifflin & Company, in 1884, and particularly the cut (Fig. 6960) appearing on page 2705, entitled "Sectional View of the Senate Wing, United States Capital, showing the Pressure and Exhaust Ventilating Apparatus"; and the description thereof, which appears on the said page directly below said cut.

And other publications, now unknown to these defendants, but which, when discovered, they pray leave to add by amendment to this, their answer in this suit.

[fol. 23] XVI

Further answering, the defendant, on information and belief, and as a separate, additional and alternative defense, avers that the said Samuel B. Smith patent in suit, 1,262,860, of April 16, 1918, alleged to be applied for October 26, 1916, is, as to the relied upon claim 1 and each method claim thereof, invalid and of no effect in law, for the reason that the alleged invention, or method of hatching eggs disclosed in said patent and pointed out in the method claims thereof, had been put into public commercial use by the said Samuel B. Smith in the United States, at Attica, Ohio, and at Cleveland, Ohio, at dates more than two years before the said Samuel B. Smith filed in the Patent Office his said application which matured into his said alleged patent here in suit, and this usage or practice of said invention was effected by said Smith at said places in incubators designed and built by him, or under his direction; and the hereinbelow named persons whose residence appear opposite their respective names, had knowledge of the said usage of said machines, at said places, to wit:

Samuel B. Smith, Cleveland, Ohio,
James W. Miller, Bucyrus, Ohio,
Albert H. Wilson, Toledo, Ohio,
Edward H. Uhle, Cleveland, Ohio,
Mr. and Mrs. Carrick, Cleveland, Ohio;

and the defendant further alleges that one or more of the said incubating machines used by said Smith at Attica, and [fol. 24] at Cleveland, Ohio, for carrying into effect his said method of hatching eggs disclosed in said patent in suit and pointed out in method claims thereof, was referred to and described in a newspaper article published in the Sunday Plain Dealer, of Cleveland, Ohio, in its issue of Sunday, February 23rd, 1913, entitled "Mammoth Incubator will turn out 20,000 Chicks per Week", and also, in an article published in the Cleveland Leader, of Cleveland, Ohio, Sunday, February 22nd, 1914, entitled "Cleveland Boasts Largest Hatchery".

XVII

Further answering, the defendant, on information and belief, avers that the said Samuel B. Smith patent in suit 1,262,860, of April 16, 1918, applied for October 26, 1916, is, as to the method claims thereof, invalid and of no effect in law for the reason that the alleged invention or method of hatching eggs disclosed in said patent and pointed out in said relied upon claims thereof, had been put into public use in the United States on Walter B. Davis' farm at Brooklyn, N. Y., and at Muskogee, Okla., and at Port O'Connor, Texas, by Milo M. Hastings, of New York City, at dates more than two years before the said Samuel B. Smith filed in the Patent Office his application which matured into said patent here in suit, and said usage of said invention was effected by said Milo M. Hastings in incubators designed and built by him or under his direction, and the hereinbelow named persons, whose residences appear opposite their respective names, had knowledge of said usage, to wit: the following three persons had knowl- [fol. 25] edge of said usage on the Walter B. Davis farm at Brooklyn, N. Y., namely:

Milo M. Hastings, White Plains Road, Tarrytown, N. Y.,
Walter B. Davis, Jersey City, N. J.,
Edgar Chambless, 122 East 34 St., New York, N. Y.;

and the following four persons had knowledge of the said usage at Muskogee, Okla., to wit:

C. T. Brewer, Muskogee, Okla.,
Mr. and Mrs. John G. Lieber, Muskogee, Okla.,
Edward Hastain, Phoenix, Arizona,
Reese V. Hicks, Kansas City, Mo.;

and the defendant further alleges that the structure and mode of operation of said Hastings incubator used by him at Muskogee, Okla., was described in an article entitled "The Mam-oth Incubator Out-Mammothed", published at Topeka, Kansas, in a periodical entitled "Poultry Culture", issued for February, 1912, Vol. XV. No. 5, pages 7, 14 and 15 thereof, copy in U. S. Department of Agriculture Library, Washington, D. C.; and the following persons had knowledge of said usage at Port O'Connor, Texas, to wit:

Milo M. Hastings, White Plains Road, Tarrytown, N. Y.,
E. T. Powers, Port O'Connor, Texas.

XVIII

The defendant, further answering, avers, on information and belief, that the said Samuel B. Smith patent in suit, 1,262,860, of April 16, 1918, is, as to the method claims [fol. 26] thereof, invalid and of no effect in law, for the reason that said Samuel B. Smith was not the true, original and first inventor of the method of hatching eggs, disclosed in said patent and pointed out in said method claims thereof, but that, on the contrary, Milo M. Hastings, of White Plains Road, Tarrytown, New York, was the true, original and first inventor of said method of hatching eggs, and was using reasonable diligence in adapting and perfecting the said invention and had reduced the same to successful practice in the United States before the same was invented or produced by said Samuel B. Smith, and that said patent in suit was unjustly granted on an application surreptitiously and illegally filed by said Samuel B. Smith and was unjustly and illegally issued in the name of the Buckeye Incubator Company as the assignee of said Samuel B. Smith.

XIX

Further answering, defendant avers and alleges that, as an additional, further or separate defense, the subject-

matter of said Letters Patent No. 1,262,860, in suit, is invalid and void as to the claims thereof, and in entirety, in that the subject-matter of each of said claims was not novel or patentable at the time of the alleged invention thereof by said Samuel B. Smith, as alleged in said Bill of Complaint; and that each of said claims, and said letters patent, is and are invalid and void for the reason that the subject-matter thereof had been invented, known, made and publicly used by or on behalf of Rolla Lawry, then of [fol. 27] Pacific, Missouri, and now of Port Chester, N. Y., and Roy F. Fullington, then and now of Clifton Hill, Missouri, prior to the alleged invention or discovery thereof by said Samuel B. Smith, or more than two years prior to the application of said Samuel B. Smith for said Letters Patent No. 1,262,860, at said Pacific and Clifton Hill, Missouri, and elsewhere, by said Rolla Lawry and said Roy F. Fullington, and others on their behalf, whereby such subject-matter of said claims and each thereof, and of said Letters Patent No. 1,262,860, in entirety, was not novel and patentable and did not amount to invention at the time of the alleged invention thereof by said Samuel B. Smith, and whereby said Samuel B. Smith was not the original and first inventor or discoverer of any material or substantial part thereof.

XX

Further answering, defendant avers and alleges, as an additional, further, alternative or separate defense, that said Samuel B. Smith surreptitiously or unjustly obtained said Letters Patent No. 1,262,860, in suit, for that which was, in fact, invented by another, Rolla Lawry, then of Pacific, Missouri, and now of Port Chester, New York, who was using reasonable diligence in adapting and perfecting the same, both before and after the time of the alleged invention thereof by said Samuel B. Smith, and who made, constructed, assembled and publicly used, an embodiment thereof prior to the time of said alleged invention thereof by said Samuel B. Smith.

[fol. 28] XXI

Defendant further alleges and avers, as an additional, further, alternative or separate defense, that said Samuel B. Smith surreptitiously or unjustly obtained said Letters

Patent No. 1,262,860, in suit, for that which was, in fact, invented by another, Roy F. Fullington, then and now of Clifton Hill, Missouri, who was using reasonable diligence in adapting and perfecting the same, both before and after the time of the alleged invention thereof by said Samuel B. Smith, and who made, constructed, assembled and publicly used, or caused to be made, constructed, assembled and publicly used, an embodiment thereof prior to the time of said alleged invention thereof by said Samuel B. Smith.

XXII

Defendant further alleges and avers that said patent No. 1,262,860, if valid, has been so narrowly construed in the Third and Sixth and Eighth Judicial Circuits that in said circuits any incubator possessed or used by defendant as in the bill of complaint alleged could not in any respect or particular infringe said Letters Patent No, 1,262,860, or any claim thereof.

XXIII

As a further, additional, separate and alternative defense, defendant alleges and avers that in the course of the prosecution of said application for said patent No. 1,262,860 in the Patent Office, claims were so repeatedly cancelled and amended and modified and substituted for, [fol. 29] and said Samuel B. Smith did so specifically disavow any breadth or scope for his pretended invention therein concerned, that said patent No. 1,262,860 must be very narrowly construed, if at all valid, and plaintiff is estopped from contending for said patent No. 1,262,860 any material or substantial scope or breadth of invention whatsoever or whereby said defendant could or could have in any respect or particular infringe or infringed said letters patent in and by the possession or use of any incubator which may have been by defendant possessed or used.

XXIV

As a further, additional, separate and alternative defense, defendant alleges and avers that because of the state of the art and analogous arts prior to the pretended invention of said patent No. 1,262,860, the subject-matter and disclosure of said letters patent and described and claimed

therein does not and could not constitute a patentable invention or arise to the dignity of invention.

XXV

As a further, additional, separate and alternative defense, defendant avers that said patent No. 1,262,960, is about to expire, and that it is against equity to grant any injunctions thereunder, and, therefore, the bill of complaint is without equity with any cause of action attempted to be set up therein.

Wherefore, defendant prays that the bill of complaint may be dismissed with costs allowed to defendant, and for [fol. 30] such other and further and just relief as to the Court may seem just and proper.

A. B. Hall. Louis C. Hall. Kwis, Hudson & Kent, of Counsel, Union Trust Bldg., Cleveland, Ohio. Raymond Ives Blakeslee, Solicitor and of Counsel for Defendant, 433 South Spring Street, Los Angeles, California.

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In United States District Court

[Title omitted]

Motion for Preliminary Injunction

Now comes the plaintiff, Samuel B. Smith, and moves this Court that a temporary injunction, in accordance with the prayer of the Bill of Complaint, be issued as soon as [fol. 31] may be practicable and convenient to this Court, directed to the defendants, A. B. Hall and L. C. Hall, d. b. a. Hall Brothers, enjoining them from infringing upon the patent in suit here, and particularly upon claim 1 thereof, by the use of an incubator or incubators embodying the invention of said claim, and particularly from using in the incubation of eggs the structure referred to in the motion papers as the Robbins Nos. 17, 23 and 26I, such as shown in Exhibits 4 to 12, inclusive, attached to the affidavit of Joseph I. Taggart filed herein, or any modification or variation thereof; or from selling the same or offering the

same for sale to others, or of otherwise disposing of said incubators.

The reasons for this motion are fully set forth in the affidavit of Mr. Joseph I. Taggart and the Brief on Behalf of Plaintiff filed concurrently herewith.

Respectfully submitted, Samuel B. Smith, by Rockwell & Bartholow, Attorneys and Solicitors. A. L. Ely, of Counsel.

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[fol. 32] IN UNITED STATES DISTRICT COURT

[Title omitted]

ORDER ON MOTION FOR PRELIMINARY INJUNCTION

Upon motion by the plaintiff in this proceeding, it is hereby Ordered:

1. That the accompanying Motion for Preliminary Injunction in this case be set for hearing at 12 o'clock on February 13th, 1935, at a term of this court to be held in the U. S. Court House and Post Office Building in New Haven, Connecticut.

2. That the service of this order upon defendants shall be made on or before January 25, 1935.

3. That defendants shall serve upon plaintiff's counsel any papers which defendants desire to use in opposition to this motion on or before February 4th, 1935; and that plaintiff shall serve upon defendants any reply papers plaintiff desires to use, on or before February 9th, 1935.

Carroll C. Hicks, U. S. District Judge.

New Haven, Conn., January 23, 1935.

[fol. 33] RETURN ON SERVICE OF WRIT

UNITED STATES OF AMERICA,
District of Connecticut, ss:

I hereby certify and return that I served the annexed Order together with Motion and Preliminary Injunction on the therein-named A. B. Hall and L. C. Hall, by leav-

ing a true and correct copy thereof with Gertrude Barbor in charge of office by request of L. C. Hall, at Wallingford, Conn., in said District on the 25th day of January, A. D. 1935.

Jacob D. Walter, U. S. Marshal, by Joseph M. Park, Deputy.

| | |
|---|---|
| 2 Services | $8.00 |
| Expense | 1.20 |
| | $9.20 |

[fol. 34] IN UNITED STATES DISTRICT COURT

[Title omitted]

DEFENDANT'S JOINDER OF ISSUE

Come now defendants above named, by their solicitor and counsel, Raymond Ives Blakeslee, of Los Angeles, California, and with respect to all and singular showings and papers filed by plaintiff on his motion for preliminary injunction, and order thereon, herein, including affidavit of J. I. Taggart, and with respect to each part and the whole thereof, traverses and denies same, in any and all respects, save and except, only, with respect to the decision of the Supreme Court of the United States heretofore entered in the cause of Waxham v. Smith, et al., but denies that the same has controlling effect upon this Court pending the determination of the Petition for Rehearing to the Supreme Court now pending in said Waxham case, and denies that it has any binding effect upon this Court whatsoever, or could have, with respect to any incubator or method of using same of defendants not before the Court in said Smith, et al. v. Waxham cause.

[fol. 35] Defendants will also rely upon the papers, files, records, proceedings, showing or showings, and the annexed brief and other showing and authorities cited.

Dated, Los Angeles, California, February 13th, 1935.

Raymond Ives Blakeslee, Solicitor & Counsel for Defendants.

In United States District Court

[Title omitted]

Order for Preliminary Injunction—Filed February 28, 1935

This Cause having come on for hearing on plaintiff's motion for preliminary injunction and having been heard by the Court on affidavits filed by both parties, on testimony in open court, arguments, and briefs of counsel, it is hereby Adjudged, Ordered and Decreed:

1. That the patent in suit is valid.

[fol. 36] 2. That the title to the patent in suit is in the plaintiff, Samuel B. Smith, and that The Buckeye Incubator Company is not a necessary party.

3. That the defendants, A. B. Hall and L. C. Hall, doing business as Hall Brothers, have infringed claim 1 of the patent by the use of the several types of incubators known as Robbins Nos. 17, 23, and 26I, or similar incubators, in the incubation of eggs at their place of business in Wallingford, Connecticut.

4. That the defendants do not avoid claim 1 of the patent by removing the eggs from the incubators on or about the eighteenth day and placing them in a separate compartment for the balance of the full twenty-one days of the hatching period, but that such operation infringes upon claim 1 of the patent.

5. That an injunction shall issue forthwith enjoining the defendants henceforth from operating Robbins Incubators Nos. 17, 23, and 26I, or similar incubators.

6. That the operation of such injunction shall be effective on Monday, March 4, 1935, unless the defendants shall file in the office of the Clerk of this court a bond in the penal sum of Twenty-five thousand ($25,000.) Dollars, the bond to be approved by the Clerk of the court and by a surety company qualified and doing business in the State of Connecticut, conditioned upon the full payment by defendants of any damages and costs which may be adjudged against the defendants by reason of the infringement of

[fol. 37] plaintiff's patent by defendants in the use of any infringing device from January 23, 1935 to April 16, 1935.

Dated February 27, 1935.

Carroll C. Hincks, U. S. District Judge.

Approved as to form. A. L. Ely, Solicitor for Plaintiff. B. M. Kent, Solicitor for Defendants.

Clerk's certificate to foregoing paper omitted in printing.

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[fol. 38] In United States District Court

[Title omitted]

Injunction

The President of the United States to A. B. Hall and L. C. Hall, Doing Business as Hall Brothers, Their Associates, Agents, Servants, Workmen, Employees, and Each of Them, Greetings:

Whereas, it has been represented to me in the United States District Court for the District of Connecticut that [fol. 39] the plaintiff, Samuel B. Smith, of Cleveland, Ohio, is entitled to an injunction against the defendants, A. B. Hall and L. C. Hall, individually and doing business as Hall Brothers, their associates, agents, servants, workmen, employees, and each of them, acting on behalf of said defendants, restraining them from the acts hereinafter mentioned;

Now, Therefore, you, the defendants, A. B. Hall and L. C. Hall, individually and doing business as Hall Brothers, your associates, agents, servants, workmen, employees, and each of them, acting in behalf of said defendants, are until the further order of this Court enjoined and restrained from operating or using in the incubation of eggs the incubators known as Robbins Incubators Nos. 17, 23 and 26I, or similar incubators infringing claim 1 of the Smith patent No. 1,362,980.

Provided That, the operation of this injunction shall be suspended if the defendants shall on or before March 4, 1935, file in the office of the Clerk of this Court a bond in the penal sum of Twenty-five Thousand Dollars ($25,-

000.00), the bond to be approved by the Clerk of the Court and by a surety company qualified and doing business in the State of Connecticut, conditioned upon the full payment by defendants of any damages and costs which may be adjudged against the defendants by reason of the infringement of plaintiff's patent by defendants in the use of any infringing device from January 23, 1935, to April 16, 1935. [fol. 40] Witness, The Honorable Carroll C. Hincks, Judge of the United States District Court for the District of Connecticut this 28th day of February, 1935, in the one hundred fifty-ninth year of the independence of the United States.

C. E. Pickett, United States District Court.

A true copy. Attest: C. E. Pickett, Clerk. (Seal.)

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In United States District Court

[Title omitted]

Motion for Leave to Amend Answer

Now come the Defendants, by their attorneys, Arthur E. Paige and Frank E. Paige, and submit that the Defendants use incubating equipment purchased from Robbins Incubator Company of 1523 Stout Street, Denver, Colorado, [fol. 41] which manufactured it. That the manufacturer agreed to adequately defend said Defendants against any litigation for infringement of Letters Patent based upon the possession and use of said equipment by said Defendants and warranted to save said Defendants harmless from any such litigation.

That pursuant to said warranty, said manufacturer employed R. I. Blakeslee and B. M. Kent to enter an appearance for Defendants in the above entitled case and to present an adequate defense in their behalf.

That, believing that the defense which has been so far presented by said attorneys of the manufacturer is inadequate, these Defendants, this First day of May, 1935, have constituted and appointed said Arthur E. Paige and Frank E. Paige as their attorneys in this case, and said attorneys have discovered that the Answer filed on behalf of these

Defendants by Messrs. Blakeslee and Kent is in fact a garbled copy of an Answer prepared and filed by said Blakeslee in the case of Samuel B. Smith v. Fontana Farms Company, pending as Equity No. 244-M in the United States District Court for the Southern District of California, Central Division. That, consequently, the Answer on behalf of these Defendants is extensively erroneous in its reference to these individual defendants as "it" throughout the entire Answer and in the denial in paragraph XI "that defendant, prior to or within six years of the filing of the bill of complaint or at any time or in any manner, was in possession of or was using in the hatching of eggs, at a place of business in Fontana, California". [fol. 42] These Defendants are not charged in Plaintiffs' Bill herein with any use in Fontana, California.

Therefore, and in view of the additional matter pleaded by Plaintiff re his Motion for Preliminary Injunction, these Defendants move for leave of the Court or Judge to amend their Answer to the form appended hereto.

Arthur E. Paige, Frank E. Paige, Attorneys for Defendants, 2312 Spruce Street.

Philadelphia, Pa., May 3rd, 1935.

AEP/CER.

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In United States District Court

[Title omitted]

Amended Answer

Defendants, without waiving any right which may be based upon any imperfection in Plaintiff's Bill, for answer thereto say:

[fol. 43] I. Defendants admit that the Plaintiff is a citizen of the United States and a resident of Cleveland, Ohio.

II. Defendants admit that their residence and place of business is at Wallingford, Connecticut, but deny that they or either of them have or has committed any act of infringement there or elsewhere.

III. Defendants admit that if this Court has jurisdiction in this case it is because it is a suit in equity alleged to arise under and be based upon the patent laws of the United States.

IV. Defendants deny all of the allegations of paragraph IV of Plaintiff's Bill.

V. Defendants admit that on October 26, 1916, the Plaintiff filed in the United States Patent Office an application for Letters Patent of the United States for an Improvement in Incubators.

VI. Defendants admit that pursuant to said application Letters Patent of the United States No. 1,262,860 was granted April 16, 1918, to Samuel B. Smith, as assignor to The Buckeye Incubator Company, a corporation of Ohio, but deny all of the other allegations of paragraph VI of Plaintiff's Bill.

VII. Defendants deny all of the allegations of paragraph VII of Plaintiff's Bill.

VIII. Defendants deny that Plaintiff or his alleged predecessor entitled The Buckeye Incubator Company has been [fol. 44] at all times the sole and exclusive owner of said patent.

IX. Defendants deny all of the allegations of paragraph IX of Plaintiff's Bill. On the contrary, Defendants allege that incubators manufactured and used by the Plaintiff in accordance with the invention of said Letters Patent have not only proven to be inferior to other incubators but destructive of life in a large percentage of the eggs incubated therein.

X. Referring to paragraph X of Plaintiff's Bill, Defendants admit that the patent in suit has been adjudicated in a large number of suits but deny that it has been unanimously held valid in such suits. On the contrary, Defendants allege that in the case of The Buckeye Incubator Company and Samuel B. Smith v. William F. Hillpot, reported in 22 Fed. (2d) 855, it was expressly adjudged and decreed "that said patent does not disclose a successful method of operation and, consequently, method claims 1 and 2 thereof are invalid and void". Moreover, Defendants allege that

said patent was held to be not infringed in many of said suits.

XI. Defendants admit all of the allegations of paragraph XI of Plaintiff's Bill.

XII. Defendants deny all of the allegations of paragraph XII of Plaintiff's Bill. On the contrary, Defendants allege that the method of hatching employed by them is essentially different from that defined in claim 1 of said patent in suit both in the several steps therein defined and in the conditions under which said steps are effected, and in the result thereof, and that the incubator structures they employ are [fol. 45] essentially different from any structure disclosed in said Letters Patent in suit. That the incubators used by Defendants are constructed and arranged in accordance with the disclosures of Letters Patent of the United States Reissue No. 18,984 dated October 31, 1933, granted to John L. Robbins of Edgewater, Colorado, for Incubator, upon surrender of original Letters Patent No. 1,728,980 granted September 24, 1929, to him.

XIII. Referring to paragraph XIII of Plaintiff's Bill, Defendants admit that they were duly notified in writing of the patent in suit and of their alleged infringement thereof, but deny the other allegations of said paragraph.

XIV. Defendants deny all of the allegations of paragraph XIV of Plaintiff's Bill and particularly that they or either of them have realized any profits or gains in connection with any act of infringement complained of in Plaintiff's Bill, and deny that Plaintiff has any right to the discovery contemplated in said paragraph.

XV. Defendants aver that the Plaintiff, Samuel B. Smith named in the patent in suit, was not the first or original inventor of anything disclosed in said Letters Patent No. 1,262,860 in suit that was new or useful or that was not known or used or patented or described in printed publications before his alleged invention or discovery thereof, and that the subject matter of said patent is anticipated by and involves no invention over the prior state of the art as disclosed by the following Letters Patent and publications:

[fol. 46] Letters Patent of the United States

| Number | Date | Name |
|---|---|---|
| 3,019 | Mar. 30, 1843 | N. E. Guerin |
| 120,253 | Oct. 24, 1871 | H. Endemann |
| 152,644 | June 30, 1874 | E. A. and C. W. Jones |
| 193,616 | July 31, 1877 | E. S. Renwick |
| 217,148 | July 1, 1879 | E. S. Renwick |
| 240,004 | Apr. 12, 1881 | F. H. Bate |
| 271,184 | Jan. 23, 1883 | H. Altenbrand |
| 272,744 | Feb. 20, 1883 | A. H. Morgan |
| 280,490 | July 3, 1883 | C. Lumpp |
| 286,756 | Oct. 16, 1883 | C. F. Winkler |
| 297,676 | Apr. 29, 1884 | G. Conant |
| 320,463 | June 23, 1885 | L. Cutting |
| 330,457 | Nov. 17, 1885 | C. Bassini & A. Heyden |
| 335,961 | Feb. 9, 1886 | E. S. Renwick |
| 344,474 | June 29, 1886 | J. W. Campbell |
| 360,223 | Mar. 29, 1887 | E. H. Johnson |
| 410,110 | Aug. 27, 1889 | J. H. Knowles & J. K. Proctor |
| 426,321 | Apr. 22, 1890 | J. K. Proctor & J. H. Knowles |
| 432,282 | July 15, 1890 | J. K. Proctor & J. H. Knowles |
| 456,407 | July 21, 1891 | F. Frey & T. M. Wayne |
| Re. 11,460 | Dec. 25, 1894 | J. K. Proctor |
| 535,178 | Mar. 5, 1895 | G. W. Schwartz, Jr. |
| 553,728 | Jan. 28, 1896 | J. K. Proctor |
| 559,676 | May 5, 1896 | T. R. C. Christianson |
| 586,088 | July 6, 1897 | W. P. Jones |
| 591,070 | Oct. 19, 1897 | P. H. Morgan |
| 599,145 | Feb. 13, 1898 | George Kutz |

[fol. 47]

| | | |
|---|---|---|
| 614,493 | Nov. 22, 1898 | C. S. Newsom |
| 691,837 | Jan. 28, 1902 | V. S. Bell |
| 709,650 | Sept. 23, 1902 | C. P. Scott |
| 725,079 | Apr. 14, 1903 | O. C. Hawkins |
| 745,458 | Dec. 1, 1903 | F. C. Perkins |
| 789,719 | May 16, 1905 | J. M. Day |
| 798,697 | Sept. 5, 1905 | F. C. Perkins |
| 828,181 | Aug. 7, 1906 | G. H. Boyd |
| 832,151 | Oct. 2, 1906 | C. S. Newsom |
| 845,909 | Feb. 12, 1907 | F. M. Peters & H. H. Hungerford |
| 885,328 | Apr. 28, 1908 | E. F. Osborne |

## Letters Patent of the United States—Continued

| Number | Date | Name |
|---|---|---|
| 891,019 | June 16, 1908 | L. Verna |
| 916,273 | Mar. 23, 1909 | A. C. Coons |
| 916,454 | Mar. 30, 1909 | V. C. Koons |
| 917,483 | Apr. 6, 1909 | C. C. Peck |
| 946,911 | Jan. 18, 1910 | G. C. Andrews |
| 949,653 | Feb. 15, 1910 | J. H. Klinke |
| 992,622 | May 16, 1911 | J. Wiebe |
| 1,010,809 | Dec. 5, 1911 | J. Schmidt & H. Schutterle |
| 1,034,205 | July 30, 1912 | J. C. Cogburn |
| 1,075,747 | Oct. 14, 1913 | C. W. Zimmer |
| 1,086,903 | Feb. 10, 1914 | A. Di Domenica, et al. |
| 1,100,146 | June 16, 1914 | J. O. Olson |
| 1,137,752 | May 4, 1915 | G. E. Goldstein |
| 1,158,447 | Nov. 2, 1915 | C. J. Coleman |
| 1,160,793 | Nov. 16, 1915 | S. S. Van Keuren |
| 1,165,958 | Dec. 29, 1915 | T. B. Freas |
| 1,195,705 | Aug. 22, 1916 | P. S. Martin |
| 1,205,445 | Nov. 21, 1916 | R. F. Fullington |

## Foreign Letters Patent

| | | |
|---|---|---|
| 117,069 (German) | Feb. 4, 1901 | J. Mann |
| 155,917 (German) | Nov. 7, 1901 | E. Stulik |

[fol. 48] **Publications**

The publications identified in paragraphs XIX and XX of this Answer.

A book by Milo M. Hastings (pages 104-105), entitled "The Dollar Hen", published by the Arcadia Press, N. Y., 1909. A copy is in the Public Library in New York, N. Y.

An article entitled "Indoor Chicken Factories", published in the Boston Sunday Globe, of Boston, Mass., issue of November 10, 1912. A copy is in the office of the Boston Globe, at Boston, Mass.

An article entitled "Hatching Chickens by Wholesale", published in the Technical World, at Chicago, Illinois, in the issue of April, 1913 (pages 248-249). A copy is in the Public Library in New York, N. Y.

An article entitled "Incubator" appearing on pages 652-653 of Ure's Dictionary of Arts, Manufacturers and Mines, published in London, England, by Longmans, Green & Co.,

in 1867. A copy is in the Public Library at Minneapolis, Minn.

An article entitled "Incubator", apearing on pages 1177 and 1178 of Knight's American Mechanical Dictionary, Vol. II, published at Boston, Mass., by Houghton, Mifflin & Company, in 1884.

An article entitled "Ventilator", appearing on pages 2704 and 2705 of Knight's American Mechanical Dictionary, Vol. III, published at Boston, Mass., by Houghton, Mifflin & Company, in 1884, and particularly the cut (Fig. 6960) appearing on page 2705, entitled "Sectional View of the Senate Wing, United States Capitol, showing the Pres-[fol. 49] sure and Exhaust Ventilating Apparatus"; and the description thereof which appears on the said page directly below said cut.

And other publications, now unknown to these Defendants, but which, when discovered, they pray leave to add by amendment to this, their Answer in this suit.

XVI. Answering Plaintiff's additional pleadings presented on motion for preliminary injunction herein; Defendants admit that in the case of Samuel B. Smith, Petitioner, v. E. H. Snow, etc., the Supreme Court of the United States, in a decision dated January 7, 1935, set forth in Plaintiff's Exhibit 2 of record in this case, construed the patent in suit upon assumptions of what were relevant scientific facts set forth in said decision and held only claim 1 of said patent valid in view of said assumptions when interpreted to be limited in the manner set forth in said decision. However, Defendants allege that said Supreme Court was grossly misled as to the alleged scientific facts contemplated, which are contrary to the actual facts known to those skilled in the art of incubation, but, in view of that interpretation, the method of hatching employed by the Defendants and upon which the charge of infringement is based is certainly excluded from the scope of said claim 1.

Moreover, Defendants allege that in each of the cases of Samuel B. Smith v. Fontana Farms Company, in Equity No. 244-M, and Samuel B. Smith v. L. A. Austin, et al., in Equity No. 245-M, in the District Court of the United States for the Southern District of California, Central Division, Judge Paul J. McCormick, who had sustained the patent in [fol. 50] suit in the case of Samuel B. Smith and The Buckeye Incubator Company v. Herbert H. Waxham, etc. (cited

by the Plaintiff in this case), on a Motion for Preliminary Injunction supported by the same evidence and arguments adduced on Plaintiff's motion for preliminary injunction in this case, refused to grant such injunction, and his decision was not reversed by the United States Circuit Court of Appeals for the Ninth Circuit, to which an appeal was taken by the Plaintiff herein.

XVII. Defendants deny all allegations made to this Court, on behalf of Plaintiff, to the effect that the alleged invention disclosed in the Smith Patent 1,262,860 in suit is broadly a method of incubation. On the contrary, each of the three method claims 1, 2, and 3 of said patent is specifically limited to "a method of hatching a plurality of eggs". Defendants submit that said "method of hatching" as construed and interpreted by the Supreme Court of the United States with reference to claim 1 of said patent in the decisions cited on behalf of Plaintiff is certainly limited to the maintenance of endothermic and exothermic eggs in heat exchanging relation in the same inclosure and in an atmosphere maintained at the same uniform temperature throughout the entire period of gestation which, with ordinary chicken eggs, is twenty-one days.

XVIII. Defendants deny all allegations made to this Court, on behalf of Plaintiff, to the effect that Plaintiff's Exhibit 13 illustrates relative progressive conditions of in-
[fol. 51] cubation characteristic of the invention disclosed in the patent in suit. On the contrary, Defendants allege that such allegations are grossly misleading, for the reason that the relative endothermic and exothermic conditions of an incubating egg illustrated in said Plaintiff's Exhibit 13 are impossible to produce or attain under the conditions of artificial incubation specified in the patent in suit and to which claims 1, 2, and 3 thereof are certainly limited.

XIX. Defendants allege that each of the claims of the patent in suit is invalid and void for the reason that the subject matter thereof was in public commercial use by the Plaintiff, Samuel B. Smith, at Attica, Ohio, and at Cleveland, Ohio, more than two years before the application for said patent was filed in the Patent Office, and that such

prior public use was within the knowledge of the following named persons:

Samuel B. Smith, the Plaintiff.
James W. Miller, residing at Bucyrus, Ohio.
Albert H. Wilson, residing at Toledo, Ohio.
Edward H. Uhle, residing at Cleveland, Ohio.
Mr. and Mrs. Garrick, residing at Cleveland, Ohio.

That the construction and arrangement of said incubating structures used by the Plaintiff Smith at Attica, Ohio, and at Cleveland, Ohio, to effect the method of hatching eggs disclosed in said patent in suit and described in the method claims thereof, are described in an article published in the newspaper entitled "Sunday Plain Dealer", published at [fol. 52] Cleveland, Ohio, in the issue of Sunday, February 23, 1913, entitled "Mammoth Incubator will turn out 20,000 Chicks per Week", and also in an article published in the "Cleveland Leader", of Cleveland, Ohio, on Sunday, February 22, 1914, entitled "Cleveland Boasts Largest Hatchery".

XX. Defendants aver that the patent in suit is invalid and void as to the method claims thereof, for the reason that the method therein described was put into public use in the United States more than two years before the application for said patent in suit was filed in the Patent Office, by Milo M. Hastings, now residing at Tarrytown, N. Y.; such use having been successfully effected by Milo W. Hastings in incubators designed and built by him or under his direction on the farm of Walter B. Davis, at Brooklyn, in the State of New York, and at Muskogee, in the State of Oklahoma, and at Port O'Connor, in the State of Texas. That such method of use on the farm of Walter B. Davis was known to three persons, namely:

Milo M. Hastings, residing at White Plains Road, Tarrytown, N. Y.

Walter B. Davis, residing at Jersey City, N. J.

Edgar Chambless, residing at 122 E. 34th Street, New York, N. Y.

That such method of use at Muskogee, Oklahoma, was known to four persons, namely:

C. T. Brewer, residing at Muskogee, Okla.
Mr. and Mrs. John G. Lieber, residing at Muskogee, Okla.
[fol. 53] Edward Hastain, residing at Phoenix, Arizona.
Reese V. Hicks, residing at Kansas City, Mo.

That the structure and mode of operation of said Hastings Incubator at Muskogee, Oklahoma, was described in an article entitled "The Mammoth Incubator Out-Mammothed", published at Topeka, Kansas, in a periodical entitled "Poultry Culture", issued for February, 1912, Vol. XV, No. 5, pages 7, 14, and 15 thereof, a copy of which is in the United States Department of Agriculture Library, at Washington, D. C.

That such method of use at Port O'Connor, Texas, was known to two persons, namely:

Milo M. Hastings, residing at White Plains Rd., Tarrytown, N. Y.
E. T. Powers, residing at Port O'Connor, Texas.

XXI. Defendants aver that said patent in suit is, as to the method claims thereof, invalid and void, for the reason that the Plaintiff, Samuel B. Smith, was not the true, original, and first inventor of the method of hatching eggs disclosed therein but that, on the contrary, said Milo M. Hastings, of White Plains Road, Tarrytown, New York, was the true, original and first inventor of said method of hatching eggs, and was using reasonable diligence in adapting and perfecting said invention and had reduced the same to successful practice in the United States before the same was invented or adopted by said Samuel B. Smith, and that said [fol. 54] patent in suit was illegally granted on an application surreptitiously and illegally filed by said Samuel B. Smith and was illegally issued to the said Buckeye Incubator Company as the assignee of said Samuel B. Smith.

XXII. That the patent in suit is invalid and void as to each of the method claims thereof for the reason that the subject matter of each of said claims had been invented and publicly used by Madison Cooper, now residing at Calcium, New York; such use having been effected by him at Pacific, Missouri. That such prior public use had also been effected at Pacific, Missouri, by Rolla Lawry, now residing at White Plains Road, Tarrytown, New York, and Roy F. Fullington, then and now residing at Clifton Hill, Missouri.

XXIII. That the Plaintiff Samuel B. Smith is estopped from contending that any claim of said Letters Patent 1,262,980 in suit is of such breadth as to describe the construction or method of use of any incubator employed by Defendants, by reason of the specific disavowal of any such breadth or scope in the prosecution of the appeal from the adverse decision in the case of The Buckeye Incubator Company and Samuel B. Smith v. William F. Hillpot, reported in 22 Fed. (2d) 855, which appeal was No. 3697 of the October Term, 1927, prosecuted in the United States Circuit Court of Appeals for the Third Circuit, and reported in 24 Fed. (2d) 341. That in the prosecution of that appeal, in order to secure a reversal of the decision of the lower court holding claims 1 and 2 of said patent in suit invalid and [fol. 55] void, said Plaintiff Smith acquiesced in the narrow construction and interpretation of those claims by the U. S. Circuit Court of Appeals in the Third Circuit.

Wherefore, Defendants pray that the Bill of Complaint may be dismissed with costs allowed to Defendants, and for such other and further relief as to the Court may seem just and proper.

A. B. Hall and L. C. Hall, d. b. a. Hall Brothers, by Arthur E. Paige, Frank E. Paige, Their Attorneys, 2312 Spruce Street.

Philadelphia, Pa., May 3rd, 1935.

AEP/CEI.

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[fol. 56] In United States District Court

[Title omitted]

Stipulation as to Narrative Statement of Evidence

It is hereby stipulated by and between Counsel for the respective parties that the annexed "Statement of Testimony under Rule 75(b)" be substituted for the "Statement of Testimony under Rule 75(b)" lodged with the Clerk on August 14, 1935, and that said annexed narrative statement of the evidence is hereby approved.

Frank E. Paige, Counsel for Defendants-Appellants.

August 29, 1935.

A. L. Ely, Counsel for Plaintiff-Appellee.

August 30, 1935.

[fol. 57] In United States District Court for the District of Connecticut

In Equity. No. 2369

Samuel B. Smith, Plaintiff,

v.

A. B. Hall and L. C. Hall, d. b. a. Hall Brothers, Defendants

## Narrative Statement of Evidence

The following is Defendants-Appellants' condensed statement in narrative form of the testimony introduced upon the trial made in pursuance of Equity Rule 75(b) and lodged in the Clerk's office for the examination of Plaintiff as provided by said Rule.

An opening statement was made by Counsel for Plaintiff, said Counsel stating that Plaintiff would rely upon claim 1 of the Letters Patent in suit. Plaintiff then offered the following exhibits, all of which were admitted and received in evidence:

### Offers in Evidence

Plaintiff's Exhibits Nos. 1-17 inclusive, exhibits which are attached to affidavits of Joseph I. Taggart. As Plaintiff's Exhibit No. 18 the testimony on the Motion for Preliminary Injunction. As Plaintiff's Exhibit No. 19, the first affidavit of Joseph I. Taggart dated January 19, 1935. As Plaintiff's Exhibit No. 20, the second affidavit of Joseph I. Taggart dated February 20, 1935. As Plaintiff's Exhibit No. 21, a [fol. 58] Stipulation re (a) the use in this case of testimony taken in former cases with regard to the Hastings prior use; (b) title to patent in suit as alleged in Bill of Complaint; and (c) right of Plaintiff to recover on all infringements of the patent in suit. As Plaintiff's Exhibit No. 22 a booklet containing copies of the decisions of the Supreme Court.

ALMON B. HALL, called as an adverse witness on behalf of Plaintiff, being first duly sworn, testified as follows:

Direct Examination.

By Mr. Ely:

I am one of the Defendants in this case and reside in Wallingford, Connecticut, where, with my brother L. C. Hall, we operate a commercial hatchery under the firm name of Hall Brothers. I have been engaged in the commercial hatching of eggs for about 25 years and have always been located in Wallingford. I attended the International Baby Chick Convention at Minneapolis in 1929, and it was at the convention or right after the convention that I purchased my first Robbins incubator. Prior to the purchase of the first Robbins 23 in 1929, we used the Hall Mammoth Incubator which is known to the trade as a sectional hot water type incubator. We have no connection with the company manufacturing the Hall incubator. It was one of the standard incubators on the market at the time. We had an entire machine consisting of a number of small sections. [fol. 59] In each section the eggs were set in one layer at one time, and the machine was known as a still air machine as it had no means of propelling a current of air over the eggs. That was the best incubator I knew about on the market of that type.

I believe it was in September, 1929, that we purchased our first Robbins machine on a trial basis to determine whether it had some advantages over the old sectional type, and ran the original 23 during the balance of the 1929 season, testing it in comparison with the sectional type incubator we had used before. We were contemplating replacing our old sectional types with a more modern draft type incubator. We merely operated the machine in a commercial way. As a result of such trial, we purchased additional Robbins incubators. The Robbins 23 incubator which we received in 1929 had a single chamber in which the eggs were carried through the full 21 days, and said incubator was provided with a large drum at one side in which the eggs were set for the first 18 days of the hatching period. That Robbins 23 appears to be shown in the photograph Plaintiff's Exhibit No. 11, our 23 incubator having a cabinet substantially as shown in that photograph and having

on the right hand side a large tilting drum with a series of racks in it. Plaintiff's Exhibit No. 9 appears to show the drum filled with trays, and I do not see any difference between the drum shown in that picture and the one we had in our Robbins 23. Plaintiff's Exhibit No. 10 shows the drum in the opposite tilted position. We set eggs in the drum at intervals of three and four days a part, in other [fol. 60] words, we set partial capacity of that drum twice a week, and after each batch of eggs had been in the drum for 18 days they were taken over and placed in the stationary hatching trays at the left. At the rear of the chamber there were located two large fans which are shown in Exhibits Nos. 11 and 12. On the rear wall, as shown in Exhibit 11, were a series of inlet openings which partially were fresh air intakes to take in a certain amount of fresh air through the openings. The incubator had adjustable slides on the back so that the amount of fresh air taken in could be varied. The incubator also had small openings on the top for the discharge of foul air but said foul air openings were not used always.

I believe that the letter appearing on Robbins Catalog C is a true copy of a letter dated May 28, 1930, written and signed by me and addressed to The Robbins Incubator Company. (A photostatic copy of said letter was offered as Plaintiff's Exhibit No. 23.) By May, 1930, we had purchased and installed seven Robbins No. 23 incubators in our plant, and had purchased and installed three No. 17's. The #23 contains approximately 23,000 eggs and the #17 contains something over 17,000 eggs. There was no difference, except size, between the #23's and the #17's. The #17 had the same tilting drum on the right and hatching trays on the left, fans on the back wall and ventilation openings. We set eggs in the same staged incubation in the No. 17's as was our practice in the No. 23's.

The letter reproduced on page 63 of Robbins Catalog D is a true reproduction of my letter dated June 15, 1931, and the facts stated therein are true. (Plaintiff offered the [fol. 61] reproduced copy of said letter as Plaintiff's Exhibit No. 24.) We added two No. 62 multi-hatchers, each No. 62 multi-hatcher having the capacity of two No. 10 separate hatchers. After the purchase of the No. 62 multi-hatchers, we left vacant the space occupied by the hatching trays in the old 23's and used the old 23's for incubation

only and did our hatching in the No. 62 multi-hatchers. In June, 1931, we had 350,000 egg capacity. In operating these hatchers we did not change the system of setting or make any other changes in the old 23's. Instead of hatching the eggs in the racks to the left we simply put them in our new #10 hatchers. We changed gradually over to the Robbins incubators.

I do not recall when we stopped using our old sectional machines as we tapered off from the use of the sectional machines as we went over into the Robbins. At the end of the 1932 hatching season I wrote another letter to Robbins Incubator Company and Plaintiff's Exhibit No. 25 appears to be a true copy of that letter. From the letter dated May 26, 1932, it would appear that we had discontinued our old hot water equipment by that date, although I do not recall when we dismantled the last of the old sectional equipment. In other words, we destroyed and scrapped it. We averaged from 10 to 15% greater hatches of the eggs set by using Robbins machines instead of the old sectional type. I mean, assuming we had a 60% hatch in the old sectional type, we got a 70 or 75% hatch in the Robbins equipment. That is, 70 to 75% of all eggs set, is what we were getting in our Robbins equipment. The copy of the letter dated October 6, 1933, appears to be a true copy of a letter which [fol. 62] I wrote to Robbins Incubator Company on that date and the facts stated therein are true. (A photostatic copy of said letter dated October 6, 1933, was offered as Plaintiff's Exhibit No. 26.) We scrapped our sectional machines prior to October 26, 1933.

During the year 1933, we added 250,000 egg capacity to our plant: We added four Model 62's consisting of two incubators of 26,000 egg capacity each. With each of the two 26,000 egg capacity incubators there was what is known as a No. 10 hatcher. The hatches were increased somewhere between 10 and 20%, probably 10%, by use of the Robbins machines, and our total capacity was approximately 650,000 after the purchase of the four Model 62 machines.

The letter reproduced on page 3 of a folder known as "Robbins News" of September, 1934, is a correct reproduction of a letter I wrote on August 25, 1934, and the facts stated therein are true. The check reproduced above the letter is a correct reproduction of our check for $5,000.00 to The Robbins Incubator Company. (The folder entitled

"Robbins News" was offered as Plaintiff's Exhibit No. 27.)

In 1934, we added a standard Robbins Model No. 125 consisting of four 26-I incubators and two of the No. 10 hatchers. We increased our egg capacity to 750,000. I do not know whether this purchase was made before or after the decision of the Circuit Court of Appeals for the Ninth Circuit, and the purchase was not made with the object of helping out Robbins. When we purchased our first Robbins in 1929, I knew that the Robbins machine was a comparatively new machine on the market and that the Smith machine had [fol. 63] been on the market for a number of years before Robbins. I saw the Robbins machines at the Minneapolis Convention and I knew the Smiths were on display there. I knew the Smith was on the market for a number of years before we bought the Robbins. We had an agency and sold a number of Robbins machines in this territory, for which sales we collected a commission.

I sponsored, but was not the author of, an article entitled "Ten Years Growth of a Connecticut Hatchery" in an issue of the New England Poultryman dated April 15, 1935, and I believe that the statements contained in the article about production are substantially true. (When pages 25, 118 and 119 of said New England Poultryman dated April 15, 1935, were offered in evidence by Plaintiff, they were objected to by Counsel for Defendants on the ground that they had no bearing upon the question of infringement. The objection was sustained by the Court and an exception noted. Said exhibit was marked Plaintiff's Exhibit No. 28 for identification.)

We received instruction manuals of Robbins electrical incubators from time to time shortly after the separate hatchers were put on the market, and said manuals contained a typewritten insert as follows: "We, therefore, most urgently recommend that from now on you transfer the eggs in the Robbins incubator at the end of the 19th day. We realize it might be difficult for some of you to break away from the old established method of testing eggs on the 18th day, but we are sure you will find our recommendations worth while." Hall Brothers, in operating the so-called separate hatchers, do not carry their eggs in the incubating [fol. 64] drums until the 19th or 20th day, but it is our practice to remove them at the end of the 18th day.

I am not familiar with the publication entitled "Smith's Chickagrams" shown me, nor do we receive it regularly from the Smith Incubator Company, nor do I recall Smith having sent me a copy of this particular issue containing a notice of the Robbins case in California. (Said publication "Smith's Chic-agrams" dated August, 1930, was marked Plaintiff's Exhibit No. 29 for identification.)

We received a letter dated August 10, 1932, and a letter dated April 11, 1934 (said letters and registry receipts being respectively offered in evidence as Plaintiff's Exhibits Nos. 30 and 31.)

An organization know as the Hatcherymen's National Defense League was organized as a sincere desire on the part of Robbins users to protect themselves against the apparent racketeering of Samuel B. Smith. The organization was formed of a number of Robbins users, and I was Treasurer of that organization. The purpose of the organization was to collect funds to combat litigation on the Smith patent against Robbins users. Funds were received by the Hatcherymen's National Defense League. The Hatcherymen's National Defense League is not contributing to the defense of this case nor are any of the funds of the Hatcherymen's National Defense League being used to defend this case. Mr. Guy A. Leader, of York, Pennsylvania, was President of the Hatcherymen's National Defense League, and K. I. Miller, of Lancaster, Missouri, was Vice-President.

(The witness Hall was not cross examined regarding that testimony.)

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[fol. 65] JOSEPH I. TAGGART, called as a witness on behalf of Plaintiff, being first duly sworn, testified as follows:

Direct Examination.

By Mr. Ely:

I am 47 years of age and reside at Cleveland, Ohio. I am Assistant General Manager of the Smith Incubator Company, in charge of research and experiments, and the installation and operation of incubators in the field. I have oversight of this patent litigation and have testified as an expert with respect to the patent in suit in a number of cases. I was present and testified as an expert in con-

nection with the Smith v. Waxham case in California brought in October, 1929, in which case there was involved the Robbins incubator No. 23. Plaintiff's Exhibits Nos. 8, 9 and 10, 11 and 12, used by Mr. Hall in his testimony, are pictures taken of the machine which was introduced as an exhibit in that case. The patent in suit was gotten out and designed for operation of incubators which were more extensive than anything that was used up to that time, which incubators had a large chamber with eggs arranged therein in superimposed trays and also wherein they had eggs in different stages of incubation. I might state that prior to this patent the incubators that were in use consisted of a single layer incubator as the eggs were arranged at one level and set at one time. In the patent, the eggs are at a number of levels and are set at consecutive times, so that when filled, the incubator will contain eggs in a number of different stages of incubation. That is the first feature of the patent. The second feature is that a blast of [fol. 66] air was applied to the eggs so that there are definite air currents through the machine of sufficient velocity to keep the temperatures substantially uniform at all points. Those two items, that is, the setting of eggs in different stages of incubation, arranging them in different levels and applying a current of air and then making that current of air strong enough to all parts of the machine to equalize the temperature, those are the new features that are in this patent.

I will describe, with reference to Plaintiff's Exhibit No. 13, the thermal characteristic of an egg during the process of incubation. When an egg is first placed in an incubator it is necessary to apply heat to it to bring it up to the incubating temperature, and it is necessary to keep adding additional heat to it for the first ten or eleven days. During that priod the egg is absorbing heat, and even when placed in an incubator with a temperature of 99, the egg will not get up to a temperature of 99 until about the tenth or eleventh day. During the period of that time it may be as low as 98. After about the fourth or fifth day the embryo within the egg is developing heat in an increasing quantity each day up to the seventeenth day. This animal heat which is developing becomes great enough to overcome the other heat that is being absorbed, so that after the eleventh

day the egg is giving off heat to the incubator. It is generating heat in excess of what is being absorbed so that after the tenth or eleventh day the egg becomes exothermic while prior to that time it is endothermic.

The area colored red in Plaintiff's Exhibit 13 represents [fol. 67] excess units of heat generated by the egg that must be given off by the egg to bring it down to incubating temperature. The area colored blue represents units of heat that must be absorbed by the egg to keep it at incubating temperature. The red area is represented by two different shades, the heavier portions representing the units of heat given off during the period up to the eighteenth day. The heat generated from the eleventh to the eighteenth day is over twice the heat units that must be absorbed during the first ten or eleven days.

Robbins Model No. 26 differs from Robbins Model 23 in that the horizontal hatching trays at the end of the machine have been removed and the turning rack has been enlarged so that it takes up the entire space. The first Model 26s that were put on the market differed from the Model 23s only in that the turning rack is longer. There was no difference in the direction of the current or the air movement in the Model 26-I over Model 23. In both these incubators the air moves outward from the fans circumferentially until it strikes the wall ceiling, and floor. Then it goes to the front of the incubator and is thrown back to the egg trays and to the fans again, moving in continuous cycles.

On the eighteenth day the embryo has been developed to a point where it is no longer necessary to turn the eggs, and it is about ready to pip. It can move about in the shell on its own accord and has passed the stage where it needs careful attention. It can stand more grief from that period on than it could up to that period.

Plaintiff's Exhibits 4, 5 and 6 correctly show the construction of Robbins 26-I incubators and were made to [fol. 68] scale from a Model 26-I. The speed of rotation of the fan is substantially the same as in Model 23 and the location of the intake openings are also substantially the same. One-sixth of the capacity of the drum is set at about three to four days' intervals.

Plaintiff's Exhibit 29 for identification, "Smith's Chicksgrams" dated August, 1930, is a house organ that was put

out by Smith at that time and which was mailed to all known hatcheries in the United States and to various people who were interested in any way in the poultry business. This particular issue went to twenty thousand, eight hundred and some people. Hall Brothers were on our regular mailing list and it went to the complete list. The notice at the lower right hand corner is the notice that we inserted in this issue following the decision of the Master in the Waxham case. After the District Court affirmed the decision in the Waxham case we sent the notice dated in 1932 to the defendant. When the District Court was affirmed by the Circuit Court of Appeals we sent out the letter of April 11, 1934. When the Supreme Court affirmed the Ninth Circuit and held the Robbins Incubator to be an infringement notices were sent to this defendant. The public was notified of the existence of the patent in suit by the application of a patent plate to the Smith machines which are manufactured by Dr. Smith through the Smith Incubator Company. The Smith machines were first put out on the market in 1922 and have been sold each year since then and have been marked with a notice of the patent. I produce a patent plate that has been placed upon the machines since 1925 and bears the notice "This incu-[fol. 69] bator is manufactured under United States Patents Nos. 1,262,860, April 16, 1918, and 1,543,130—June 23, 1925". This plate was on the commercial machines manufactured by Smith in 1929. (Said plate was offered in evidence as Plaintiff's Exhibit 32.)

The propulsion of a current of air in both the Smith and Robbins incubators keeps the temperature of the air substantially uniform. It will pick up heat units from the eggs that are warmer than the air and will give up heat units to the eggs that are cooler than the air. In the Robbins incubators Models 17, 23, 26-I, and 1254 the air passes over eggs which are in the exothermic and endothermic condition and it does not make any difference whether or not eggs are taken out after they have reached the nineteenth day. The capacity of Model 125 is 125,440 eggs including the hatching unit of approximately 18,000 egg capacity. Model 125 consists of 4-No. 26-Is and two No. H-10s. It calls for six settings. About 18,000 eggs are set at one time.

Cross-examination.

By Mr. Paige:

When I testified about "incubating temperatures" on direct examination, with reference to the diagram Plaintiff's Exhibit No. 13, I meant a temperature of 99° F. My experience has been that it is 99° F. With the atmosphere in the inclosure of the incubator at 99° F., the eggs do not get up to that temperature until about the tenth or eleventh day. It will vary with different breeds and may vary as much as twenty-four hours, depending upon the condition of the eggs at the time they are set and the breed. The temperature of the eggs on the eighteenth day [fol. 70] is approximately 100° F., although it may vary, depending upon the conditions, the strength of the air current, the amount of evaporation, and other things of that kind. Depending upon the type of incubator, the embryo within the egg will attain a maximum temperature as high as 104° F., some of them 103° F. I have seen them higher than that. I have seen them as high as 105° F. The statement in line 40 on page 1 of the Smith patent in suit "The temperature of circulating air should be such as will prevent the eggs in the early stage of incubation from falling below 100 degrees," refers to the temperature of the eggs. The temperature of the air in the incubator would have to be higher than 99° F. to attain that condition. I do not think I recently testified before Judge Geiger in Milwaukee that it would have to be 102° F. I think my testimony there was to this extent: That apparently nobody recognized the fact that the temperature of the eggs went down as low as it does at the early stages of incubation because I cannot find any literature on that at all. The temperature of the incubators at the date of this patent was considered 100° F. As we have increased the humidity, changed the humidity, we have also changed the temperature so that at the present time in the Smith we recommend a temperature of 99° F. in the air and a wet bulb reading that varies from 85° to 90° F. depending upon the time, and those things make it possible to operate at lower temperatures than we formerly thought was possible. In accordance with my tests, experiments, and long experience, it would be necessary to maintain the air in a Smith incubator at at least [fol. 71] 100-½° F., perhaps 100-¾° F. to maintain the

eggs in the early stage at not less than 100° F. I have never conducted an experiment in which we kept the early eggs at 100° F., but in my experience I would state it would be at least 100-½°, perhaps 100-¾° F. I have stated before that since this patent came out, we have changed our methods of humidity and found that we could carry more humidity and when we carry more humidity we have changed our temperatures of operating and with increased humidity we operated at lower temperatures, and we began to do that about the time I took charge of the experimental work. I never conducted an experiment to determine what was the effect of maintaining such a temperature in the Smith incubator that the eggs did not fall below 100° F., as described in the patent, during the early stage, say the first ten days. I do not know just what you mean by your inquiry as to whether or not I was the inventor of the present method of hatching which is promulgated to the trade as the Smith patent. In 1928 we discovered that it was possible to maintain the humidity very much higher than we had been maintaining it in the past, and with that humidity we had to be careful to keep the temperature at 99° F. We had recommended it before that, as much as four or five years, but the success was not proved to its present state until after we increased the humidity. The humidity was discovered about ten years after the Smith patent issued. The method of hatching now recommended to Smith users is different from that shown in the Smith patent in that respect. With our present knowledge and [fol. 72] present humidity, if you subjected eggs to such a temperature of air that they do not fall below 100° F. in the early stage or first ten days, it would be fatal to practically all of the eggs. That was my discovery. In the Waxham case I testified that "Even with the proper humidity, 99-¼°, it is too hot for a Smith incubator." The scientific facts were not known at the time the Smith patent issued and it was then generally supposed that the temperature of the air at 100° F. would keep the eggs at 100° F. We have made discoveries since that time to show that the foregoing was not the scientific fact. The Buckeye incubators which were put out under the patent in 1917 and on up until almost the present time were operated at 100 degrees. The Smith which was a larger incubator, which held three to four times as many eggs, in that we have always recom-

mended a temperature of 99, and in the earlier stages it was hard to hold it down. In the early incubators it was hard to hold it down to those temperatures. It was hard to hold down in 1923. We first gave that information to Smith incubator users in 1923.

Redirect examination.

By Mr. Ely:

There is a definite relationship between humidity and temperature. As you increase the humidity you can lower the temperature. The increase of the humidity has been an improvement since the issuance of the Smith patent, and if you had less humidity your temperature would be higher. In our old practice we had a lower humidity and a slightly higher temperature. In smaller machines it would [fol. 73] perhaps be possible with a lower humidity to operate properly keeping the eggs at a temperature between 100° and 105° F., but I do not think it would be possible with as large a machine as we use. The temperature at 100° and 105° F., referred to in the Smith patent, is the temperature of the egg, of the embryo. This matter of increasing the humidity came along about 1928, and the Smith incubators had been in successful operation—as "Smith Incubators" —for approximately five years prior to that time. Buckeye incubators, which are licensed under the Smith patent, had been in successful operation for ten or eleven years before this improvement of increasing the humidity. Buckeye started manufacturing incubators under the Smith patent in 1917 and Smith started on the market with his incubators in the Summer or Fall of 1922. The discovery or improvement by increasing the humidity did not come along until about 1928. There had been a considerable question on that and the exact amount did not work out until about 1928.

"By the Court:

Q. I thought you said on cross examination that although Buckeye operated it at an egg temperature of 100° as early as 1917 or 1918, that Smith advised a 99° temperature as early as 1923?"

It was found that with more egg capacity and perhaps a little different air movement, we had to go lower. The

larger incubators operated at a different temperature. At that time we were using steam for humidity and our tem-
[fol. 74] perature was 99° F. The Buckeye was using moisture pans to evaporate for humidity and they were operating at a temperature of 100° F. and continued to do so with their small machines up to the present time. It was not until 1928 that the real high humidity was put into common use and was recommended. Some customers had been doing it partially prior to 1928, but it was not until 1928 that we raised the humidity to the point that we did. As a matter of fact, we had been operating at about a 35% relative humidity and some up as high as 45%. In 1928 we recommended that they go to 55% relative humidity except on hatching day when they would increase it to 70% relative humidity which was way higher than had been thought possible. The custom prior to 1928 was to set your thermostat at 99° but if the animal heat carried it on up, not to worry about it if it did not go over a hundred. When we put out a relative humidity with a higher point, then we had to give them definite instructions not to let it go above 99¼° F. They set it at 99° and kept it there or as near as they could.

Recross-examination.

By Mr. Paige:

I did not testify before Judge Geiger to the effect that you had to increase the humidity when you raised the temperature and that it required more humidity in the atmosphere at 100° F. than it did at 99° F. I am certain that you increase the humidity as you lower the temperature. If you endeavor to carry out the instructions of the Smith patent by having the temperature in the incubator high enough, in ex-
[fol. 75] cess of 100° F. to insure that the eggs in the early stage would not fall below that temperature, the destructive effect of that high temperature upon the eggs would not be compensated for by increasing the humidity of that atmosphere at that high temperature. There would not be any way of helping that condition and you are dealing with a fact that was not known in 1917.

Redirect examination.

By Mr. Ely:

This matter of the temperature of the eggs and so forth which has just been discussed was raised in practically all of the other cases, including the Waxham and Snow cases.

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DEFENDANTS' PROOFS

An opening statement was made by Counsel for Defendants, said Counsel stating that evidence would be adduced in this case which had not been before or considered by the Supreme Court.

MILO MILTON HASTINGS, called as a witness on behalf of Defendants, being first duly sworn, testified as follows:

Direct examination.

By Mr. Paige:

Defendants' Counsel asked the witness the following question:

"Q. Mr. Hastings, on May 3rd, 1911, an application, Serial No. 624,885, was filed in the United States Patent [fol. 76] Office for an Improvement in hatchery for the eggs of domestic fowl. That record includes these statements:

'My invention is that of a hatchery in which I secure better ventilation and a more uniform temperature throughout the hatching chamber by substituting a forced draft for gravity drafts.

'Ventilation I secure through cracks around the door of the hatching chamber or other small openings in any part of the air circuit. The air being constantly in motion requires less rejuvenation than dead air.

'The problem has been to enable the incubating operations to be carried on continuously, if so desired, with eggs at all stages of development, and with all of a vast number of eggs subjected to the same temperature and atmospheric conditions best adapted for the development of the embryo.

'In practice it is found that with vast numbers of eggs assembled in a single compartment and with eggs at all stages of incubation, but very little extraneous heat need be supplied because the eggs in the later stages of development supply the necessary heat for the eggs in the earlier stages of development. In practice, however, a source of heat is always maintained in order to permit of proper regulation.'

"That application was signed merely, 'Milo Hastings'. Do you know who that Milo Hastings was?"

[fol. 77] (The question was objected to on the ground that the best evidence should be the introduction of the application, that the application was abandoned and that the quotations do not appear in the application as filed. The objection was sustained and an exception noted.)

My present occupation is that of a writer. On May 3, 1911, I was in the employ of Mr. Walter B. Davis operating an incubator. At that time I filed an application for patent. Pages 258 to 295 inclusive of the Transcript of Record in the United States Circuit Court of Appeals for the Third Circuit in the case of The Buckeye Incubator Co. and Samuel B. Smith v. Cooley is a true photostatic copy of the file wrapper of that application for patent. The application was abandoned before the stage of appeal to the Commissioner. (That portion of the record which is comprised in pages 258 to 295 inclusive of the Transcript of Record in the United States Circuit Court of Appeals for the Third Circuit in the case of The Buckeye Incubator Co. and Samuel B. Smith v. Cooley, was offered in evidence as Defendants' Exhibit F. The offer was objected to by Counsel for Plaintiff on the ground that its admission in evidence was wholly immaterial to all issues of the case and on the ground that an abandoned application is not an anticipation or part of the prior art. In answer to the Court's query, Plaintiff's Counsel informed the Court that no objection was made on the ground that Defendants' Exhibit F was not certified. Counsel for Defendants informed the Court that Defendants' Exhibit F was not offered as an anticipation or part of the prior art, but as documentary evidence tending to corroborate the testimony of Defend-
[fol. 78] ants' witness. The Court reserved its ruling, and ruled as in its opinion on file.)

Before filing this application I put into practical use in Brooklyn, New York, the method of hatching which is described in that application and in the papers on record concerning it. This was done at Mr. Davis' poultry farm, Kings Highway, Brooklyn, New York. I built an incubator for Mr. Davis and was paid for building it and operating it for a time. The money which I received from Mr. Davis included the sale to him of the right to use that method of hatching. After I had built the incubator for him I operated that hatchery for him. This was about in the Spring of 1911. The building was in the Winter of 1911 probably mostly in the month of February. We started hatching in March and I left there sometime in May and the incubator was still in operation at the time I left. The method of hatching that I employed in the hatchery that I directed for Mr. Davis and concerning which I licensed him to use, consisted of placing the eggs in superimposed layers, many trays one above the other, circulating the air through that chamber by means of a fan, and operating to place the eggs in the chamber at frequent intervals. I would say the average interval was twice a week, and continuing in the same chamber to incubate the eggs in the various stages of incubation and to hatch them in the same chamber. The method of hatching was a success, which we demonstrated, by hatching in comparative tests with Cyphers' machine, which was then considered as the standard make. The hatches were equally as good in the new style machine as in the Cyphers' [fol. 79] machine manufactured by The Cyphers Incubator Company, a leading make of that machine.

About two months' continuous hatching was checked under my direction in this hatchery directed for Mr. Davis, with eggs put in as we received them, averaging about twice a week. I do not remember the exact number of hatches, but it would amount to a three weeks' period. Mr. Davis had a farm of his own and we were also buying eggs and it was continuous. Mr. Davis had laying hens on that poultry farm and he also bought eggs which he considered better for hatching. He put both eggs from the farm and eggs which he purchased in this incubator. It was a commercial operation of my method of hatching and was as successful as the previously used incubators that Mr. Davis had. I do not recall what was the percentage of the hatches but I think our comparative tests with the Cyphers machine was

about 59%. I wouldn't be sure of that exactly. We made a comparative test by dividing 1 lot of eggs and putting some in Cyphers machine and some in the machine I built. I would not be sure of it exactly but my memory is that the machines hatched about equally well and that the hatch was about 59%.

I left the employ of Mr. Davis in the latter part of May which was after I had filed this application for patent. In the incubator that I built for Mr. Davis there was a fan by which forcible circulation of air was effected. The air was artificially heated by a gas heater and the temperature controlled by both thermostatic and gas pressure regulators.

"Q. Of course, you have to have a door to get in and out [fol. 80] of that incubator. Do you recall what was the construction of that door?

"A. I do.

"Q. Did it permit the ingress of a restricted amount of air or not?

"A. It did.

"Q. Did that incubator have any means for letting the foul air out?

"A. It did.

"Q. Was that a wide opening or a restricted opening?

"A. A restricted opening.

"Q. I think you have clearly indicated that there was what is known in this art as staged incubation, by saying that you had the eggs put in there at intervals of twice a week.

"Mr. Ely: I don't recall that. Will you ask him the direct question, please.

"Q. Did you have staged incubation in that incubator?

"A. We did."

We practiced staged incubation in the incubator during the entire time we were operating it.

The Edgar Chambless whose name appears as a witness on my application was a personal friend to whom I disclosed my invention. He is still alive but I do not know his address. It was customary for Mr. Davis to have a good many visitors to his poultry farm.

I recall an advertising booklet entitled "Davis Poultry Farm" which I have before me. The booklet contains a

picture showing a large sign "Davis Poultry Farm. Fresh Eggs." The catalog states "Visitors Welcome".

I could not say whether the booklet was published during the time I was there or not. It was in use at that time, the pictures are all familiar, and I remember seeing that cata- [fol. 81] log in circulation and given out. The book correctly illustrates the layout of that Poultry Farm. On the eighth page of that booklet there is a photographic reproduction at the bottom, and the person at the left is a friend of mine by the name of Orvis, Editor of "The Poultry Digest" which was published in New York. I had previously explained my method of hatching to Mr. Orvis and he introduced me to Mr. Davis to give me an opportunity to contact Mr. Davis and to build an incubator.

(The advertising booklet entitled "Davis Poultry Farm", copyrighted 1911, was offered in evidence and objected to on the ground of immateriality. The Court reserved its ruling and stated that the same ruling should follow that the Court would make upon the admissibility of the application. Said advertising booklet was marked Defendants' Exhibit G for identification.)

The incubator and the method of hatching that I sold to Mr. Davis was in use when I left his employ.

Cross-examination.

By Mr. Ely:

This is not my first appearance in these Smith litigations. I appeared in person and testified before his Honor, Judge Bodine, in the Cooley case. I have never known the outcome of that case particularly, and know the outcome by general hearsay. My deposition was taken about two years ago in the cases of Smith v. Simms and Smith v. James. I have been informed that in the Simms case the patent was held valid and infringed notwithstanding my testimony. [fol. 82] I also testified in Minneapolis within the last two or three months before Judge Molyneaux. The testimony does not cover all the same ground, although I testified in all those cases regarding my prior use. I presume that I am being paid for my time to come here and testify and I was paid for going to Minneapolis and in the cases involving the Simms, James, and Cooley defendants. That is about the most money I ever made out of this thing.

In the application as filed in the Patent Office, which has been offered here in evidence, there is nothing about staged incubation in the application which was signed and executed by me on the 15th day of April, 1911, which was while I was operating the Davis incubator, and after the incubator was built. The application was filed without legal advice and there is no disclosure of staged incubation in that application as I signed it in April, 1911. I prepared and filed the application myself.

The drawing of the application shows dotted lines which are lettered E and E and described as pieces of fabric on either side that inclosed the egg chamber, and the fan is outside. In one of the previous cases I probably testified that the fabric cut down the flow of air in the egg chamber, and this is a fact as I remember. The incubator which I built in 1911, at Mr. Davis' place had a capacity of 6,000 eggs. We never operated full capacity. I do not remember the number we operated. We never had it full. I recall testifying in the case of Smith v. James and Smith v. Simms that the hatcher was built for 6,000 eggs but that there was no need to operate at the time because we were not en-

[fol. 83] gaged in the hatching business but only running a private poultry farm. That at no time while I was there was the hatcher run to capacity and, in fact, it was never run to more than one-third capacity.

I left Mr. Davis' place while the hatching season was going on. I was present when Mr. Davis testified in the Cooley case and recall that Mr. Davis testified that the hatcher was wrecked but not immediately upon my leaving. I do not recall testimony that it was wrecked and was not used during the succeeding hatching season.

I recall that when I left Mr. Davis, I prepared a booklet, thinking I was going to capitalize on this idea of mine, but I do not recall whether the booklet had any stock selling ideas or some description of the machine. I do not recall the exact wording in the booklet but there was something in it about having run a hatchery of 15,000 egg capacity at Mr. Davis' plant. I am the person referred to as the first person in the statement, "In the season of 1910-1911 I built and operated a 15,000 egg single compartment hatchery on the poultry farm of W. B. Davis in the suburb of Brooklyn. This demonstration was a complete success as the follow-

ing letter will testify," appearing on page 252 of the record in the Cooley case. This is a publication which I got out, and the statement therein that I had run a hatchery of 15,000 egg capacity during 1910-1911 is an exaggeration and was not true.

Mr. Davis had a very large house and part of that house was used for operations in connection with the poultry farm. The incubator was in the cellar of the house shown on the fourth page of the booklet and not in any of the [fol. 84] other buildings shown. My incubator was built in the same cellar of the same house where Mr. Davis had his other incubators. I think that it is correct that I testified in the Simms and James cases that I did not operate this thing as a public use but kept it secret because my application for patent had not yet been filed.

In about the year 1917, I went out to Ohio and was employed by a man by the name of Hoppel to build an incubator for him. My answer to your question as to whether or not I recall testifying, "I tried out a method of hatching there very much more like the Smith Buckeye device than I had used in the past" on page 121 of the Cooley Record, speaking of the Hoppel operations in 1917-18, is that I remember so testifying that the fan was used for the circulation of air. I remember testifying in the case of Smith v. James, on page 113 of the Record, as follows:

"As a matter of fact, this use at the Davis Hatchery was not a public use, was it, it was kept secret?

"A. It was in the residence of Mr. Davis, in the cellar. He was hatching for himself alone, or I was hatching for him, his employee, and it was not public in the sense that we had public customers or any bids made to the outside customers to come and visit the hatchery, but Mr. Davis' friends and mine were shown the hatchery."

"Q. And you kept it secret because you hadn't filed a patent application at that time, isn't that correct?

"A. I think that was my impression at that time, of not wanting the general public in, yes."

[fol. 85] I do not recall any written agreement with Mr. Davis. I was employed by Mr. Davis and paid wages for my labor to build an incubator, a hatchery with material which he purchased, on his place, and to stay there and

operate it, and therefore his employee to operate it, and being that this was a new invention of mine, it was understood that in building this for him I gave him the right to operate the machine I built for him. When read with the context, I remember testifying as follows in the case of Smith v. James on page 102 of the Record: "I do not remember the details of the time we set these eggs because it was of no importance to the principle of incubation, but merely a matter of convenience in handling the eggs and taking off the chicks."

Mr. Davis continued in the poultry business for a time after I left. There are no contemporaneous drawings in existence at the present time of the incubator which I built at the Davis place. There are photographs but not drawings. No part of that incubator is in existence today and has not been in existence since about 1912 or 1913.

Redirect examination.

By Mr. Paige:

I was twenty-seven years old when my application for patent was filed. I prepared the application myself and had had no experience whatever in preparing applications for patent.

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[fol. 86] Walter B. Davis, called as a witness on behalf of Defendants, being duly sworn, testified as follows:

Direct examination.

By Mr. Paige:

My present occupation is that of printer and linotypist. I printed and published about 2,000 copies of the booklet entitled "Davis Poultry Farm," which has been marked for identification as Defendants' Exhibit G. The booklet was printed and published in New York City, the type set in my plant, and the material was printed by Gibbons and Van Glink. The booklet was printed and published in 1911 and at that time I sent a copy on to be copy-righted. It states on the booklet that it was copyrighted in 1911. The booklet contains tree pictures of the buildings, chickens, and one thing or another that were on the farm at that

time. I lived in the building to which Mr. Ely referred as a house in his cross-examination of Mr. Hastings. We had four incubators in one large cellar room of the house and then I had one that Hastings built, making five incubators in the cellar of the house. In answer to your question as to how I came to build the fifth incubator, Mr. Francis Orvis, head of "The Poultry Digest," introduced Mr. Hastings to me and Mr. Hastings said that he would build an incubator which would supplant all the Cyphers stuff. We had not had very good luck with the Cyphers so we were very glad to try another brand and we did. Mr. Orvis' picture is shown at page 8 of the booklet entitled "Davis Poultry Farm."

There were plenty of other visitors to the farm while I [fol. 87] had it, and it was my practice to extend a welcome to visitors. I absolutely welcomed hundreds of them—thousands. Although we had there approximately 5,000 hens, we only used a few of our own eggs in the incubators. I got most of the eggs for the incubators from a Mr. George Howard, of Bound Brook, New Jersey. He shipped them to me about twice a week, one or two crates as he may have had them. He had a superior brand of eggs.

Mr. Hastings built his incubator out of wood and cork. Various other things were used in the construction, including a gas heater, an electric fan, two governors were installed—I remember that thoroughly—one was a linotype governor to control the gas. It was a mercury-controlled governor, as used on a linotype casting machine, and when it got hot enough the heat shut it off automatically. Mr. Hastings had a thermostatic control also, but I insisted he make sure to put on the linotype governor, which controlled the heat to a very fine degree. Mr. Hastings installed a thermostatic control that controlled the heat from the gas burner when he built the incubator. The gas burner heated a large tin hood and in some way this heat was pushed into the cellar. This large tin hood heated the air that went into the incubator and was attached to the side and cut into the wood. It was set in there and the gas funnel was there and the inside connection in it in order that the heat may drift in. We had a fan to circulate the air. It kept it circulating so that the top of the box and the lower part of the box were the same. We had a thermometer at the bottom, another at the center, about six or eight thermometers al-

[fol. 88] together, and in that way we positively determined that the temperature was the same throughout the incubator. We used Cyphers thermometers that were marked at 102-½° F. and the temperature we had in that incubator was 102-½° F. My impression is that after Mr. Hastings left my employes were also instructed to keep the heat at 102-½°. That was also the temperature at which it was intended that the Cyphers incubators should be used.

By my arrangement with Mr. Hastings, it was clearly understood that everything that went into the incubator in the basement belonged to me absolutely. I paid him his wages and bought the material which he used to construct it. I absolutely paid him what was agreed upon. I did not make any separate payment for the use of his method of hatching and the entire thing came to me as my own property. It was my understanding that what I paid Mr. Hastings covered both the construction of this incubator and the privilege of using his method of hatching. I continued to use the incubator and method of hatching after Mr. Hastings left my employ. Eggs were placed in the incubator in trays. The trays were one above the other—deep trays. We did not have enough eggs to put in the machine at one time. We put in the eggs about twice a week as we could get them from Mr. Howard and a few from my own hens.

"Q. You put them in twice a week?
"A. At least."

My orders and agreements with Mr. Howard were that he was to ship me as many as he could at different times from the very fine hens. Some days we would get one crate, [fol. 89] some days we would get two or three crates, and he continued to do that for the entire period. Mr. Hastings built the incubator and he operated it there two or three months. In December and by January of 1911 he began and did construct the incubator. He left my employ within about five or six months after he entered it.

Mr. Hastings told me that he had filed an application for patent but I had nothing to do with it and he never showed me the application. While he was in my employ he told me that he had made the application but I never saw it. While Mr. Hastings was in my employ he had a writing room and he had various business. I was not there all the time. I was in the city a great deal of the time, and Mr.

Hastings was his own boss, so to speak. I did not overlook him carefully at all. My principal business was linotypist and in my establishment I operated eight linotype machines day and night and I employed thirty people in 1910, 1911, 1912, and 1913.

"Q. Was this incubator used under your direction and this method of hatching under your direction after Mr. Hastings left?

"A. Oh, yes."

We had the incubator in the cellar of the house until December of 1913 when I abandoned the farm, and I then removed everything from the cellar. I leased, did not own, the farm. When other things took up all spare cash and I lost quite a lot of money in the aviation business I thought I would close up all outside places and get back to the linotype business. I lost all my money in an investment in the aviation business at that time and as a result I had to dispense with the farm. Before we turned back this rented property to the owner, I completely cleaned out the cellar, [fol. 90] the incubators in the cellar. My nephew actually did the physical work.

Other people besides Mr. Francis Orvis came there and saw this incubator and the method of hatching while I had it going. A great many people came down who were my guests on Sunday. We had quite a party every Sunday. The number of people would run into many hundreds—perhaps a couple of thousand. Sometime there would be as many as 200 guests on a Sunday. I remember one Sunday I slaughtered over 200 chickens to feed them. There were about 78 people at one table alone. We had four dining rooms and then we had something over.

Cross-examination.

By Mr. Ely:

I was called to attend in New Jersey in the case of Smith v. Cooley, but I do not remember a very great deal of the testimony. I never saw my testimony printed or anything and I do not even know the disposition of the case. Mr. Paige did not show me the printed testimony before I went on the stand today and I did not know it was in print until you mentioned it. It was probably in 1926 that I testified

in the case but I do not remember. When I cleaned out the farm I did not destroy the Cyphers incubators but took them out and carried them off by truck. The Hastings incubator was a large thing and it had to be destroyed. I do not recall anything about burning it, and I instructed my nephew to remove it. I do not remember testifying: "Everything was knocked to pieces and put out in the back yard and burned up" but I do recall that I instructed my [fol. 91] nephew to destroy the incubator and remove it. I did not see it burned. I wasn't there. I insist that I instructed my nephew to take it out. I don't recall that testimony that you say is there. Maybe I did. In the copy of my testimony in the Cooley case which you hand me I see the statement "Everything was knocked to pieces and put out in the back yard and burned up along with a bunch of other trash."

Redirect examination.

By Mr. Paige:

The Cyphers incubators were 300 egg capacity incubators and were quite portable, so that you could pick them up and move them out. The incubator built by Hastings was a very large affair and we could not take it out without destroying it.

Recross-examination.

By Mr. Ely:

I instructed my nephew to remove the stuff from the cellar and clean up the cellar generally. I discontinued the poultry business in 1913 and I do not know if another incubator was ever built like it as I did not go into any other plant.

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Isabel E. Davis, called as a witness on behalf of Defendants, being first duly sworn, testified as follows:

Direct examination.

By Mr. Paige:

I am the wife of Walter B. Davis, and I recall the booklet which you hand me which is entitled "Davis Poultry Farm"

[fol. 92] and which is marked for identification as Defendants' Exhibit G. I know there were a good many copies of the booklet published and I recognize all of the reproductions of photographs in the booklet. I know that Mr. Davis made an agreement with Mr. Hastings in the Winter at the beginning of 1911 about the putting up of an incubator at the Davis Poultry Farm. I saw the incubator many times and it was located in the cellar of the farmhouse where there were other incubators. I know they made tests as to the comparative merits of the old incubators and the new incubator but I was not there when they made the tests. Mr. Hastings was in Mr. Davis' employ in making this incubator and supervising its operation less than a year. I do not remember any more definite time as I did not pay much attention. I was a bookkeeper and cashier in Mr. Davis' linotype place in New York City and all bills were paid through me. I remember that monthly payments were made by Mr. Davis to Mr. Hastings. As I recall it, we paid him a certain amount each month and his living expenses were allowed, and we paid for all material. The bills were paid through my office. I think that Mr. Davis paid Mr. Hastings a bonus when he left, but I have forgotten and do not remember. The incubator was used by Mr. Davis after Mr. Hastings left and was operated by a manager we had down there by the name of Miller. I do not know how long he ran it after Mr. Hastings left. In answer to your inquiry:

"Q. Do you remember what was the nature, what was the method of hatching in there; how the eggs were placed in that incubator?

[fol. 93] "A. Well, I was in the incubator several times. They seemed to be in all stages on tiers—shelves.

"Q. Shelves one above the other?

"A. Shelves one above the other, from eggs to chicks.

"Q. Some had eggs in there and some had chicks?

"A. Yes.

"Q. That is what they call in this case staged incubation. About how often were fresh eggs put in that incubator, do you recall?

"A. At least twice a week.

"The Court: Are you testifying from what you personally observed?

"The Witness: Yes, personally.

"The Court: I thought you were in the office?

"The Witness: Well, I went down every week to check up.

"The Court: Did you go down twice a week?

"The Witness: No, but I know how the eggs came in from Bound Brook."

I kept the books for the hatcher business, as well as for the linotype business and kept track of the receipt of the eggs. I know Mr. Davis gave up the poultry farm because he had lost so much money we could not keep it, but I have forgotten when that was.

(No cross-examination.)

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[fol. 94] Milo Milton Hastings, recalled as a witness on behalf of Defendants, being previously duly sworn, testified as follows:

Cross-examination.

By Mr. Ely:

I quite obviously furnished information, furnished something probably, for the article in the Boston Sunday Globe of November 10, 1912, reproduced in the Cooley Record which you hand me. I do not know where the writer of the article got the information for the statement in the article "Finally in the winter 1910-1911, a small plant was constructed on the Davis Poultry Farm in Brooklyn, New York, and the idea fully demonstrated. This plant was not open to the public as its workmanship was crude and the applications to the Patent Office not completed." I probably furnished many previous clippings. There was much publicity at that time.

I cannot remember this individual or what I furnished him individually. There was much publication at that date.

I do not recall that I testified that I furnished the information on which this article was published in the Boston Sunday Globe.

I remember testifying in the case of Smith v. James in answer to the question on page 174 of the Record:

"And you have always been motivated, have you not, by a comparison of the success which Dr. Smith obtained and the failures you obtained?

"A. I think it natural that an original inventor, a man [fol. 95] who believed himself to be the original inventor of a basic principle, which another man later develops and attempts to monopolize, would feel some element of resentment that he did not share in such return."

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ALMON B. HALL, called as a witness on behalf of Defendants, being first duly sworn, testified as follows:

Direct examination.

By Mr. Paige:

The temperature of the atmosphere in the incubators we used during the incubation process is 99° F. The percentage of moisture in that incubator is from 35 to 45%. The temperature of the atmosphere in the separate hatchers is 98° F. The percentage of moisture in the separate hatcher is from 65 to 80%. Since the Fall of 1930 we have entirely used the system of keeping the eggs in the incubators for eighteen days and then transferring the eggs to the separate hatchers. Since the Fall of 1930 we have not conducted a method of hatching in a single chamber in which there is staged incubation and in which the eggs are hatched. The advantage in the method which we have been employing for the last few years, over the method employed before, is that we can control the temperature in the incubator at a different degree than we do the temperature of the separate hatcher. This is also true of the percentage of moisture and is an advantage. It is also an advantage [fol. 96] as we get better hatches. I would say that we get from 2 to 5% increase of hatches by using the combination of incubator and separate hatcher, as distinguished from the other. The highest percentage of eggs set that we have had hatched would be between 85 and 90%. I never used Smith incubators.

We made a test to determine what would happen to eggs in a closed chamber, otherwise like our ordinary practice

except that we ran the temperature of the atmosphere in that incubating chamber at 102° F. with the result that of 50 eggs in the test, we hatched two chicks on the 18th day. That is all that came out. Some of them broke the shell, but were not able to get out—possibly a half dozen. In other words, our percentage of hatch was 4% as distinguished from 85 to 90% in our ordinary method of hatching.

We operate our incubators at 99° F. and in the Robbins machine 99¼° F. would not damage the eggs completely. It might cut down the percentage and quality of the chicks. By quality I mean the chicks would be dried out, and would be smaller. They debilitate.

Cross-examination.

By Mr. Ely:

A 5% hatch would be a substantial improvement. When we went from 70 to 75% that was a substantial improvement in hatching. I recall in the letter of June 15, 1931, I said, referring to those separate hatchers: "We feel that we have obtained slightly better hatches and greater uniformity than were possible with this new equipment."

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[fol. 97] ORDER APPROVING NARRATIVE STATEMENT OF THE EVIDENCE

The foregoing narrative statement of the evidence is hereby allowed and approved, and the same is hereby ordered filed as a statement of the evidence to be included in the Record on appeal in the above styled cause, as provided in paragraph (b) of Equity Rule 75.

Carroll C. Hincks, U. S. D. J.

Dated September 4, 1935, New Haven, Conn.

[fol. 98] PLAINTIFF'S EXHIBIT No. 18.

JOSEPH J. TAGGART, was called as a witness on behalf of the defendants, and having been duly sworn, testified as follows:

By the Clerk:

Q. 1. What is your full name?
A. Joseph J. Taggart.
Q. 2. Where do you live?
A. Cleveland, Ohio.

Direct examination.

By Mr. Toulmin:

Q. 3. You have just given your name, Mr. Taggart?
A. Yes, sir.
Q. 4. And your residence?
A. Cleveland, Ohio.
Q. 5. What is your occupation?
A. I am Service Man for the Smith Incubator Company.
Q. 6. Of which Dr. Smith is President?
A. Yes, sir.
Q. 7. Dr. Smith, the patentee, in this litigation?
A. Yes, sir.
Q. 8. And the plaintiff here?
A. Yes, sir.
Q. 9. You represent Dr. Smith as plaintiff here in this Court, and you came with Mr. Ely, did you not?
A. Yes, sir.
Q. 10. You are familiar, are you not, with the Buckeye Incubator Company of Springfield, Ohio, as the exclusive licensee having the exclusive right to make and sell and/or use all incubators up to 16,500 egg capacity?
A. Yes, sir.
Q. 11. And you are familiar with the exclusive license arrangement with the Buckeye Incubator Company, that Dr. Smith has agreed not to sell, make or use incubators up to 25,000 egg capacity?
A. Yes, sir.
[fol. 99] Q. 12. By the way, what are the egg capacities of the defendants' individual units for incubator and hatcher, at present out here in support of your affidavit?

A. 26,000 Model 26-I which hatches 26,000 and some eggs.

Q. 13. Do you refer to more than 26-I or only 26-I?

A. I refer to 26-I, and I have also seen larger hatcher units and other machines.

Q. 14. These other models, 23 and 17, are 17,000?

A. Model 23,528.

Q. 15. And 17 is 17,000 approximately?

A. That given by the catalogue. I am not sure of the exact numbers.

Q. 16. That is approximately?

A. Yes, sir.

Q. 17. Are you familiar, Mr. Taggart, with the license contracts that exist between the Buckeye Incubator Company and Dr. Smith?

A. Yes, sir.

Q. 18. I hand you what is dated as a contract on 29th of April, 1927, and will ask you if that is the 1927 contract of license of the Smith patent in suit, that exists between the Buckeye Incubator Company and Dr. Smith?

A. That is not a photostatic copy, it is typewritten. It appears to be a copy of the contract.

Mr. Toulmin: We offer that to be marked in evidence as Defendants' Exhibit A.

(Received in evidence and marked "Defendants' Exhibit A".)

The Court: It is not fully identified; I suppose we can accept it subject to verification.

Mr. Toulmin: I think we can, your Honor. I think there is no denial about the contract.

[fol. 100] The Court: I assume it is a fair copy, without comparison?

Mr. Toulmin: Yes, sir.

The Court: Unless called to my attention——

Mr. Toulmin: Yes, sir.

Q. 19. I will hand you supplement agreement made at a later date in 1923 between Dr. Smith and the Buckeye Incubator Company, referring to the 1927 agreement; do you recall that one?

A. This likewise is a typewritten instrument. It is not a photostatic copy. It is not signed. There is no signature. I could not identify it.

Q. 20. You know there is some such contract, do you not?

A. I know there is a contract about that time, yes, sir.

Q. 21. And it referred back to the 1927 contract, did it not?

A. Yes, sir.

Q. 22. And you can advise the Court without doubt that there is existing today an exclusive license under the Smith patent in suit, as described heretofore—as to the patent, is that correct?

A. Yes, sir. The Buckeye Incubator Company was given exclusive license on the lower sizes, and Smith retained the upper sizes, and Smith retained, according to the contract——

Q. 23. And that exclusive license agreement or agreements, are in existence today, are they not, Mr. Taggart?

A. Yes, sir.

Mr. Toulmin: I ask this be marked Defendants' Exhibit B. I think these contracts are unnecessary in view of the witness' admissions of title.

(Received in evidence and marked "Defendants' Exhibit B".)

[fol. 101] Cross-examination.

By Mr. Ely:

X Q. 24. Mr. Taggart, are you familiar wherein the legal title of the patent resides?

A. Dr. Smith.

X Q. 25. And Dr. Smith is connected with the Smith Incubator Company, and is manufacturing incubators of the larger sizes, is not that so?

A. Yes, sir.

X Q. 26. He manufactures from 20,000 on up?

A. Yes, sir.

X Q. 27. And the 26-I, which you say has about 26,000 egg capacity, within whose field does that fall?

A. Dr. Smith's.

X Q. 28. And the 17,000 and the 17 and 23-I, 17,000 and 23,000 eggs approximately, in what field does that fall?

A. Falls between Buckeye and Smith; Buckeye has no right under that at all.

X Q. 29. And the duty of pursuing infringers under the patent, rests in whom?

A. Dr. Smith.

X Q. 30. And who gets the recoveries?

A. Dr. Smith.

X Q. 31. Do you know that these things that you are testifying to, are facts within your own knowledge?

A. Yes, sir.

X Q. 32. Therefore, the particular incubators which are involved in this case, do not fall within the field which has been licensed to Buckeye?

A. That is correct.

X Q. 33. And Buckeye has only the exclusive license to the incubators of 16,500 and less?

A. Yes, sir, that is all.

Redirect examination.

By Mr. Toulmin:

R. D. Q. 34. As a matter of fact, Mr. Taggart, Dr. Smith does not do any manufacturing, using or selling, himself, at [fol. 102] all; is that correct?

A. He does do all or a great deal of the organization.

R. D. Q. 35. He does not do it himself?

A. In which he owns all the stock.

R. D. Q. 36. He does not do it himself, does he?

A. I think he manufactures personally.

R. D. Q. 37. Does he now manufacture and sell personally, or only through a corporation?

A. I am not real sure of the exact set-up of that. He manufactures himself and has a selling organization, which is the Smith Incubator Company.

R. D. Q. 38. Has he any manufacturing corporation?

A. You have got me. I do not know.

Mr. Toulmin: That is all.

Recross-examination.

By Mr. Ely:

R. X Q. 39. You said something of the stock ownership of the Smith Incubator Company; do you know in whom that resides?

A. Dr. Smith personally, probably.

Mr. Toulmin: That is all. Your Honor, I have here an authority I did not have time to get in my brief. I only came into this case with the papers last Monday morning. I do not make that as an excuse, but I ask the Court's indulgence. There is a case in 11 Fed. (2), page- 214-216, by Judge Learned Hand, to the effect that this title question can be raised at any time, even after final decree. That is the authority referred to.

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[fol. 103] So much for those two questions. I now would like to call Mr. Hall on the stand on the question of the facts. Mr. Hall, will you take the stand, please.

Almon B. Hall, was called as a witness on behalf of the defendants, and being first duly sworn, testified as follows:

Direct examination.

By Mr. Toulmin:

Q. 1. Where do you reside?
A. Wallingford, Connecticut.
Q. 2. Mr. Hall, you are one of the defendants in this case?
A. Yes.
Q. 3. You live here, that is, in this community?
A. Wallingford.
Q. 4. And how long have you lived there?
A. 43 years.
Q. 5. And what is your occupation?
A. Poultry raiser and hatching chicks.
Q. 6. And what make of incubator are you now using?
A. Robbins Electric Incubator.
Q. 7. Are you practicing separating hatching or you are not practicing, what is the situation?
A. We are using separate hatching entirely.
Q. 8. How long have you been using separate hatching entirely?
A. Since January, 1931.
Q. 9. That is when you first started using separate hatchers?
A. Yes. January, 1931, is the first one of the separate hatchers we put in.

Q. 10. Did you immediately start at that time to practice separate hatching exclusively, or did you come to it at a later time?

A. We came to it in about September, 1931.

[fol. 104] Q. 11. Since September, 1931, have you practiced anything other than separate hatching?

A. No.

Q. 12. Prior to adopting separate hatching, had you used any Robbins machines that did not have the separate hatcher?

A. Yes.

Q. 13. Will you tell the Court now as to the separate hatcher, just what is the separate hatcher procedure, the construction of it, so that the Court will get first hand from you what this case is all about. Just turn and tell the Court.

A. The eggs are incubated in the incubating compartments for 18 days, and then they are transferred to separate trays into an entirely separate machine with separate parts, and they are carried there at three days until they are entirely hatched.

The reason for doing that is both economical and sanitary. We get better results in doing that for the reason that in the incubating machine we run a temperature of approximately 99½ degrees, and the humidity of 35 to 50 per cent. In the second hatcher we run a temperature of 98 degrees and humidity of around 80. These are conditions which are more desirable for eggs of the different stages of incubation, and it results in a different quality of chicks and a higher percentage of hatch.

For sanitary reasons we can after every hatch clean out the separate hatchers and all the dirt from the hatching, because in the separate hatcher there is no dust or shells or dirt in the incubator, and it is very essential that proper sanitation be carried on in connection with the hatchers, and that was the reason for hatching under those conditions, and the reason that all practical machines operate [fol. 105] and hatch in separate compartments.

Q. 14. Will you tell the Court what is the reason for this extraordinary precaution of the sanitation, as to why you use the separate hatcher for that purpose?

A. The main reason is for Pulorum disease, such as is transmitted from the breeding of the egg to the chick, and

there should not be any of that disease in one hatch, and the fact that you do not completely eliminate the dirt between the hatches, and that eliminates the chances of carrying it over into another hatch. Then, there are certain fungus diseases that can be established in a machine that would carry over from one hatch to another, and that is entirely eliminated by this process.

Q. 15. In the incubator portion of this hatcher incubator combination, in the incubator box, do you move the eggs at any time from the time you first place them in the cabinet until you remove them about the 18th day?

A. We have them out once and test out the infertile eggs, about the 7th day.

Q. 16. Do you change the position of the eggs after you take out the poor ones?

A. No, we do not change them.

Q. 17. Then, at the end of the 18th day, where do you place these eggs in the trays?

A. They are transferred to the hatching tray and from that into the separate hatching compartment.

Q. 18. About how long does it take to do that?

A. It takes possibly three or four minutes to remove the trays from the incubator and then the process of transferring them from one type of tray to the other, and that takes 20 to 25 minutes for the 26 machines.

[fol. 106] Q. 19. During that period are the doors of the incubator open or closed?

A. They are open for about two or three minutes.

Q. 20. And during that period the eggs that are being placed on the rack which is to be conveyed over to the separate hatcher, are those eggs in the open room or in a special heating compartment?

A. They are in a cabinet, and they are not exposed entirely to the room temperature.

Q. 21. And where is this compartment located with respect to the incubator and the hatcher?

A. It is on casters that are moved from one machine to the other.

Q. 22. It is an open frame-work for supporting the trays?

A. That is right.

Q. 23. And during the period of 20 to 30 minutes, as the trays and eggs are being put on this wheel rack, the eggs the subjected to the room temperature?

A. Partially.

Q. 24. Did you adopt this separate hatcher combination by reason of this patent infringement suit?

A. No.

Q. 25. What were the sole reasons that you adopted the separate hatcher combination?

A. For the production of a higher quality chick and getting a higher percentage of hatch and eliminating disease and make complete sanitation possible.

Q. 26. Mr. Hall, in the hatcher itself, do you have eggs of more than one age?

A. No.

Q. 27. They are just eggs of one age only in the hatcher?

A. That is right.

Q. 28. And the conditions of temperature and moisture are different, I believe you testified, in the hatcher as compared with the conditions of temperature and moisture in the incubator?

A. That is right.

[fol. 107] Q. 29. What is the reason for the differences in the temperature and moisture in the incubator with respect to the hatcher?

A. The eggs in the incubator require a higher temperature and a lower moisture as compared with the hatcher. A hatcher requires high moisture and lower temperature.

Q. 30. Why is that, Mr. Hall?

A. It results in a more normal condition of the hatch. We get a better quality chick and slightly higher percentage of hatch.

Q. 31. That is based on your experience out here at your plant?

A. Yes.

Q. 32. You say a better quality of chick and higher hatch as compared with what machines?

A. In the machine in which the chicks were hatching in the same compartment as being incubated.

Q. 33. Of the type you had formerly before you adopted the separate hatcher?

A. Yes.

Q. 34. Do your men go inside the compartment either of the hatcher or incubator when they are moving the eggs?

Mr. Ely: I object to that as immaterial.

Mr. Toulmin: I think it is quite material.

Mr. Ely: The Supreme Court has held that 23 was an infringement, and they did not go into that either. I do not see any reason for dragging this thing all through again. The Supreme Court has spoken as to No. 23.

Mr. Toulmin: Never on the separate hatcher.

Mr. Ely: This has nothing to do with the separate hatcher.

[fol. 108] Mr. Toulmin: It has everything to do with the separate hatcher.

The Court: Will you read the question.

(Last question repeated as recorded.)

The Court: I think that the defendant is entitled to show his practice. Admitted.

A. No, they do not.

By Mr. Toulmin:

Q. 35. Mr. Hall, will you state to the Court whether you have in contemplation any changes in your machines or the sales of the machines or movement of the machines out of the jurisdiction of this Court?

A. Not a thing.

Q. 36. Will you tell the Court briefly something about your financial worth and financial responsibility?

A. We have been in business for 24 years and our present assets as of November 30th, are $244,731.19. We have current assets at that time of $124,679.09. We had current liabilities of $57,559.87.

Q. 37. Your condition today is substantially shown by those figures?

A. I think so.

Mr. Toulmin: That is all. You may have the witness.

The Court: Those figures lead to a net worth of what, if you have it computed?

Mr. Ely: No bond has been posted, your Honor, and I call your attention to that.

The Court: You gave aggregate assets of $244,000 and liabilities of fifty some thousand plus?

The Witness: Yes, I have those figures here.

[fol. 109] The Court: Were those current liabilities only?

The Witness: Current liabilities, yes.

The Court: Have you any aggregate liabilities to correspond with the aggregate assets?

The Witness: The total net worth, $140,670.15.

Cross-examination.

By Mr. Ely:

X Q. 38. Your concern is not a corporation, is it?

A. No.

X Q. 39. Just two brothers?

A. Yes.

X Q. 40. What is the other brother's name?

A. Louis C.

The Court: The figures you have given are the firm figures?

The Witness: Yes.

Mr. Ely: That is the assets of both of you?

The Court: That is the assets of the firm, as I understand it, disregarding your personal financial condition.

The Witness: Correct.

By Mr. Ely:

X Q. 41. Before you had these No. 26 incubators with the separate hatchers, Mr. Hall, you operated the Robbins 23, did you not?

A. Yes, sir.

X Q. 42. And you are familiar with that, of course, and with the operation of the Robbins 23?

A. Yes.

X Q. 43. How long did you operate those?

A. We operated those from September, 1929, was the first time.

X Q. 44. Up until when?

A. Up until about September, 1931.

[fol. 110] X Q. 45. That is the incubator you understand which was involved in what is known as the Waxham litigation, you understand that?

A. Yes.

X Q. 46. In that Robbins No. 23, you did not go into the incubator at any time?

A. No.

X Q. 47. That is to say, as far as the 26 and the 23 are concerned, they are the same in that respect?

A. Yes.

X Q. 48. And in operating the Robbins 23, you took the trays out of the incubating cabinet at the 18th day, you took them out into the atmosphere of the room at the time, so that you could retray them for the hatching of the chicks, is that so?

A. Yes.

X Q. 49. In that respect there is no difference between the Robbins 23 and your present practice?

A. In that respect only.

X Q. 50. In that respect there is no difference?

A. Only in that respect.

X Q. 51. Mr. Hall, in this Robbins 26 that you are now using, you have a large tilting drum in which the eggs are held from the first to the 18th day, is that not so?

A. Yes.

X Q. 52. And the Robbins 23 which was involved in the Supreme Court Opinion, had a large tilting drum in which the eggs were set from the first to the 18th day, is not that so?

A. Yes.

X Q. 53. And in that respect, the 23 and the 26 are not different?

A. In that respect only.

X Q. 54. You have had several "onlys" already, and I advise you to drop the word "only" for a moment. In the operating of the 23, you set the eggs at intervals of three days apart, did you not, in the tilting drums?

A. No, not necessarily.

X Q. 55. You set them at short intervals, short of the total 18 day period?

A. We set them two days a week.

[fol. 111] X Q. 56. That is, you would set them three and then four days, is that correct, your interval would be three and four days?

A. Yes.

X Q. 57. In your Robbins 26, how do you set your eggs?

A. We set them two days a week.

X Q. 58. The same as you did in the operation of your 23?

A. Yes.

X Q. 59. In that respect there is no difference between the 23 and the 26?

A. In that respect only.

X Q. 60. Again you say "only". In the Robbins 23, you had a fan or two fans at the back which propelled the air through the chamber, did you not?

A. Yes.

X Q. 61. And in the Robbins 26 you have one fan, is that correct, or two, which is it?

A. Two fans.

X Q. 62. And the space which was taken up by the Hatching racks of the 23 has now been taken up by increasing the size of the drums, so that you have a larger drum in the 26 than you had in the 23, is that right?

A. Yes.

X Q. 63. And when you were operating the Robbins 26 you had eggs in staged incubation, had you not?

A. We have them in certain stages.

X Q. 64. You have them in more than one stage in this tilting drum, is that correct?

A. Yes.

X Q. 65. And some of those eggs have just been put into the tilting drum and some have been in for a period of say from 15 to 18 days, is that not so?

A. Yes.

X Q. 66. And that is to say, as you understand it, some of those eggs are cold eggs and are absorbing heat, and some are giving off heat, is that so?

A. I assume so.

X Q. 67. You have no cause to dispute that statement [fol. 112] that the egg passes from the heat absorbing to the heat giving-off stage at the 11th day?

A. I do not know where the distinction is.

X Q. 68. That is to say, if you set all your eggs at one time in the 26 incubators, you would have them all reaching the heat generating stage at the same time, would you not?

A. Yes.

X Q. 69. And you would have them when you first started in all in the heat absorbing stage at the same time?

A. Yes.

X Q. 70. You have by your principle of operation of the 26, you have a balance or an attempt to balance those two properties of the eggs, you have some eggs that are absorbing and some that are heat generating in operating your 26?

A. I believe so.

X Q. 71. And there are small openings at the back of the fans to take in a certain amount of fresh air and there are small openings in the ceiling for the discharge of foul air, is not that so?

A. There are openings, but they are not necessarily used in that way.

X Q. 72. But you have openings for the interchange of air from the outside atmosphere to the interior of the incubator?

A. Yes.

The Court: Was that true both of the 23 and the 26?

The Witness: Yes, there are openings, but as a matter of practice only the openings in the back of the machine are regularly used.

The Court: You are speaking now of which model, both models?

The Witness: Both models.

[fol. 113] By Mr. Ely:

X Q. 73. There is no difference between the two models in that respect?

A. No.

X Q. 74. When did you first receive notice? Do you recall when you first received notice of infringement of the patent in suit?

A. No, I do not.

X Q. 75. Do you recall whether it was approximately in August of 1930 that you were first notified of infringement?

A. I do not recall.

X Q. 76. At the time you were first notified of infringement, you were using the Robbins 23's?

A. I do not recall.

X Q. 77. Do you recall that fact?

A. No.

X Q. 78. Do you not recall the fact that after you received the notice you switched over to the Robbins 26 after your first notice of infringement?

A. That is not true.

X Q. 79. That is not true?

A. No.

X Q. 80. When did you say you switched over from the 23 to the 26?

A. I do not recall receiving any notice.

X Q. 81. Will you answer my question, please?

A. We put in our first separate hatchers in 1931, early 1931.

X Q. 82. And you went over completely to the separate hatcher idea when?

A. In September, 1931.

X Q. 83. In regard to this matter of sanitation, are you familiar with the operation of the Smith Incubators as they are on the market now?

A. No.

The Court: Just a moment. I am not sure that it has [fol. 114] any importance, but I understand Mr. Hall to say on direct examination that the defendant began using the separate hatchers in January, 1931.

The Witness: That is correct.

The Court: And just now I understood you to say in August.

The Witness: You are mistaken.

The Court: You began using them in January?

The Witness: Yes, and we completed the change over in September, 1931.

By Mr. Ely:

X Q. 84. You are not familiar then with the fact that in the Smith incubator, the incubating department is cleaned up after every hatch and fumigated?

A. No.

X Q. 85. This matter of the B. W. D., which is Bacillary White Diarrhœa, which you referred to as Pulorum disease, that is contracted by the chick by breathing the down or infected down?

A. I do not know.

X Q. 86. You do not know that fact?

A. No.

Mr. Ely: That is all.

Mr. Toulmin: That is all.

(Witness excused.)

The Court: We will take a short recess.

(After a short recess.)

Mr. Ely: I wish to ask Mr. Hall another question.

[fol. 115] Almon B. Hall, resumed the stand.

By Mr. Ely:

X Q. 87. You gave the figures as to the assets of the firm. In those figures, to what extent have you included these incubators?

A. At their inventory value.

X Q. 88. What is that?

A. I could not say.

X Q. 89. You have included these incubators in your figures of the assets?

A. Certainly.

X Q. 90. Have you a statement showing how you arrive at those assets?

A. No.

X Q. 91. From what were you giving your figures?

A. From a bank balance sheet.

X Q. 92. And was that the amount that you gave the bank balance?

A. That is the bank balance statement. It is the bank statement.

X Q. 93. The statement to the bank that you made?

A. Yes.

X Q. 94. In which you listed your various assets, is that correct?

A. Not the various, but the total.

X Q. 95. You listed the items of your assets in this statement to the bank and that is what you have been testifying from, is that right?

A. They are not itemized.

X Q. 96. However, the incubators are included in your assets?

A. Yes.

X Q. 97. That you have given this morning?

A. Yes.

X Q. 98. What did those incubators cost you?

A. I could not say.

Mr. Ely: That is all.

(Witness excused.)

[fol. 116] DEFENDANTS' PROOFS—(Continued)

Mr. Toulmin: I am almost at the end of this proof, if you will indulge me just a moment.

Mr. Ely: Do I understand that I will have the opportunity to put a rebuttal witness on?

The Court: Surely.

Mr. Toulmin: I have some publications here on an important question, and one is on the embryology of the chick, and this 18 day, and the reason for transfer, and two others on the disease question. I have photostats of the pertinent pages that I would like to have in evidence.

Mr. Ely: I object to them. We have not been furnished copies of that.

Mr. Toulmin: You have had them before.

Mr. Ely: Not in this case.

The Court: Show them to counsel. He may waive his objection.

Mr. Toulmin: I have not had time to get additional copies, but I will get them.

Mr. Ely: All right.

Mr. Toulmin: We offer in evidence a photostat of the title page of the book "The Development of the Chick," by Frank R. Lillie, Professor in the University of Chicago, and photostats of pages 210, 211, 218, 219, 220, 221 and 232 as our Defendants' Exhibit C.

The Court: Is it objected to?

Mr. Ely: Yes. I object to that as immaterial.

[fol. 117] The Court: Do you waive any objection as to its competency?

Mr. Ely: They are publications that have to do apparently with some status of diseases, but I do not see what it has to do with the issues of this case. They have not been pleaded.

The Court: If they are offered in this form, what about the opportunity to cross-examine?

Mr. Toulmin: They are technical publications that are current in the trade.

Mr. Ely: The authors are not here, and I object to it for that additional reason.

The Court: They are surely not competent if the objection is pressed on that score.

Mr. Ely: I press the objection.

Mr. Toulmin: Then your Honor rules out the Exhibit C?

The Court: Do you wish to have it marked for identification?

Mr. Toulmin: Yes. It may be marked under the rule so that I will take an exception.

The Court: It is conceded, is it not, that the offers have not been previously brought to the attention of counsel?

Mr. Toulmin: Not in this particular case. They are quite standard publications and have been in these cases.

(The same was thereupon marked "Defendants' Exhibit C for Identification.")

Mr. Toulmin: I likewise offer as Exhibit D, to which the same set of circumstances will apply, the Agricultural Ex-
[fol. 118] periment Station Bulletin of the Kansas State Agricultural College, Technical Bulletin No. 21, of November, 1926, and the title page, and pages 3, 46, 47, 48 and 49.

Mr. Ely: Same objection.

The Court: Same ruling.

Mr. Toulmin: And the same tender and exception.

(The same was thereupon marked "Defendants' Exhibit D for Identification.")

Mr. Toulmin: We offer as Exhibit E the cover page of the Journal of American Veterinary Medical Association of February, 1926, and pages 628, 629, 630, 631, 632, 633, 634, 635, 636, 637, 638, 639 and 640 and 641 as the entire exhibit.

Mr. Ely: Same objection.

The Court: Same ruling.

Mr. Toulmin: Same exception.

(The same was thereupon marked "Defendants' Exhibit E for Identification.")

Mr. Toulmin: Your Honor, I am through with the fact proof that I have to offer in this matter. Does your Honor care to hear me on the argument of the facts?

The Court: I would rather close the evidence before proceeding on arguments. Has Mr. Ely any evidence?

Mr. Ely: Yes.

[fol. 119] PLAINTIFF'S REBUTTAL PROOFS

GEORGE MCCONNAUGHEY, was called as a witness in rebuttal on behalf of the plaintiff, and having been first duly sworn, testified as follows:

Direct examination.

By Mr. Ely:

Q. 1. Mr. McConnaughey, where do you reside?

A. Cleveland, Ohio.

Q. 2. Mr. McConnaughey, you are a practicing attorney admitted to the Bar in Ohio?

A. Yes, sir.

Q. 3. And your present position?

A. I am attorney for the plaintiff here.

Q. 4. And how long have you been Dr. Smith's attorney?

A. For eight years.

Q. 5. And in that capacity you have been familiar with a great deal of this litigation that has gone on with regard to the Smith patent?

A. I have.

Q. 6. Do you recall approximately the date that the Master handed down his Opinion holding the Robbins 23 Incubator to be an infringement of the Smith patent?

A. In 1930, June or July, 1930.

Q. 7. Following that decision did you notify various users of the Robbins machine of the decision and of their infringement thereof?

A. I did.

Q. 8. Did you notify this particular defendant, Hall Brothers?

A. I did.

Q. 9. At what time?

A. In August, 1930.

Q. 10. Then again there was a reopening of that case, you will recall, and it was decided again by the Master holding the patent valid and infringed; do you recall that?

A. Yes, sir.

[fol. 120] Q. 11. Following that decision on the reopening, did you again notify the various users of Robbins machines?

A. I did.

Q. 12. Including this defendant Hall Brothers?

A. I did.

Q. 13. And what was the date of that, do you recall?

A. That was in July of 1931.

Q. 14. Then you recall that the District Court affirmed the Master's holding that the Robbins Incubator was an infringement of the Smith patent and the Smith patent was valid, do you recall that?

A. Yes, sir.

Q. 15. What was the date of that?

A. July, 1932.

Q. 16. Following that did you notify the users of the Robbins machine including this particular defendant of its infringement?

A. I did.

Q. 17. Then you recall that the Circuit Court of Appeals of the Ninth Circuit affirmed the decision of the District Court; do you recall about the date of that?

A. That was in 1933.

Q. 18. Following that, did you send the same notices of infringement out to various Robbins users including this particular defendant?

A. I did.

Q. 19. And then when the Supreme Court passed upon the Robbins incubator in January, and handed down its decision on January 7, 1935, were notices then sent to this defendant?

A. There were.

Q. 20. They were sent immediately after the decision, were they not?

A. That is correct.

Q. 21. A matter of about four days as I recall?

A. Between four and ten days.

Q. 22. And they were sent to this particular infringer?

A. That is correct.

[fol. 121] Q. 23. Have you ever had any reply from this defendant since the decision in the Supreme Court was handed down?

A. No, sir.

Q. 24. Any attempt to settle or negotiate?

A. No, sir, there has not been.

Mr. Ely: That is all.

Mr. Toulmin: That is all.

(Witness excused.)

JOSEPH I. TAGGART, was called as a witness on behalf of the plaintiff, in rebuttal, and having been previously duly sworn, testified further as follows:

Direct examination.

By Mr. Ely:

Q. 1. Mr. Taggart, you have testified and qualified as an expert on incubation, and also a patent expert in these various cases that involve the Smith patent?

A. Yes, sir.

Q. 2. And you testified in the Waxham case in California as an expert?

A. Yes, sir.

Q. 3. And a practical expert as well as a technical patent expert?

A. Yes, sir.

Q. 4. And you also testified in the Snow case in the same manner?

A. Yes, sir.

Q. 5. That was the one tried before Judge Molyneaux in Minnesota, and later went through the Eighth Circuit and on up to the Supreme Court?

A. Yes, sir.

Q. 6. Mr. Taggart, this matter of so-called sanitation in [fol. 122] the separate hatcher, this Pulorum disease that Mr. Hall referred to, just how is that transmitted?

A. Pulorum disease is the one disease that can be carried from the mother through the egg to the chick. If the egg at the time it is laid contains the germs, they will go ahead and develop through incubation. At the time the chick hatches or cuts its way out of the shell, it will simply be bathed with these germs, and as the chick dries, they will be released to the air and spread about through the incubator and be breathed in by other chicks. The other chicks become infected by way of the lungs.

That spread can only take place from chick to chick and cannot take place from one egg to another egg or from an egg to a chick, or from a chick to an egg. It is only spread when chicks are hatching in the same machine.

This spread can take place in a separate hatcher or in any other type of machine or even under the hen, if these diseased chicks are present. The fact that there is a separate hatcher has nothing to do with that at all.

Q. 7. That is to say, the presence of eggs that are unbroken, that is, eggs from the first to the 18th day, does not assist in any way to the propagation of the disease, the embyro within the egg shell can not contract the disease from an infected chick that may be in the same chamber?

A. No, sir.

Q. 8. When you go over into a separate hatcher you have all the chicks hatched in the same environment?

A. Yes, sir.

Q. 9. And what is the difference in spreadability, if I may use that word, of the disease in an incubator of the type shown in the Smith patent, where all the eggs are in from [fol. 123] the first to the 21st day, and the separate hatcher where the chicks are only during the hatching time?

A. There is no advantage one way or the other as far as spread taking place.

Q. 10. The disease germs are found upon down released by the chick carried into the air and then breathed by another chick?

A. That is correct.

Q. 11. Can those germs get through the egg shell?

A. No, sir.

Q. 12. They are only transmitted then from chick to chick in the hatching compartment?

A. That is right.

Q. 13. What about the matter of sanitation of the Smith incubator; is the separate hatcher any better as far as the sanitation is concerned than it is in a Smith incubator?

A. As far as the germs are concerned, there is no advantage whatever in the separate hatcher. The sanitation can be practiced in one machine just as well as in another.

Q. 14. Explain that further. What do they do to sanitate it?

A. There is the ordinary clean up, and you can go further and fumigate. In the Smith machines, we fumigate with formaldehyde and render the interior of the machine sterile as far as any of the germs have any effect on the chicks.

Q. 15. And when they sanitate a separate hatcher, what do they do?

A. Follow the same process.

Q. 16. Does the formaldehyde gas have any deleterious effect on the eggs?

A. Not at the strength at which it is used.

Q. 17. Therefore, there is no advantage so far as sanitation is concerned in the separate hatcher idea over the Smith?

A. None whatsoever.

[fol. 124] Q. 18. Let us assume for a moment that an incubator such as the Robbins 26 Incubator, were filled with eggs all at one time, and there are about 26,000 eggs you say in the incubator?

A. Yes, sir.

Q. 19. And how much heat are those eggs generating from the 15th to the 18th day?

A. The amount varies from day to day, but on the 18th day they would be generating about 10 B. T. U's. per piece a day in 24 hours.

Q. 20. And that is to say, if you had your eggs all set at once in the Robbins Incubator, when you got to the 18th day, how much heat would be generated by those eggs?

A. It would be better than 20,000 B. T. U's. per hour.

Q. 21. That would be difficult to keep the incubator cool?

A. It renders it impossible as the incubator is constructed to keep it cool.

Q. 22. In the regular operation of the 26, what effect have the cool eggs in the same incubator compartment?

A. They help to balance this excess heat and tend to keep it substantially balanced between the cool and the warm, so that it is not necessary to add a great deal of heat, nor is it necessary to add very much refrigeration.

Q. 23. It is not necessary to add a great deal of heat when you start off?

A. After you once get the eggs warmed up for the first hour or two, that is, eggs that are put in cold, there is heat added at that time, but when the machine is in operation there is an addition.

Q. 24. Come back to the assumed operation, and you fill this 26 with eggs at one time, what would be your condition as far as the application of heat is concerned?

A. You would have to have heat continuously during the first 10 to 11 days.

[fol. 125] Q. 25. Then what is the benefit of having the eggs in the staged incubation in the 26 incubator?

A. You utilize the heat generated by nature and it makes it possible to put a large volume of eggs in a small com-

partment so that they can be incubated economically. You take advantage of the laws of nature in doing so.

Q. 26. And what is the advantage of having some cold eggs in?

A. It helps to keep the warm eggs cooled in the proper temperature.

Q. 27. And the circulation of the air, what does that do?

A. The circulation of the air equalizes the temperature between the eggs at different stages.

Mr. Ely: That is all.

Cross-examination.

By Mr. Toulmin:

X Q. 28. Mr. Taggart, in the Smith machine as I understand it, when you start up the machine, you operate it continuously through the succession of hatches that you may wish to hatch with the machine, is that correct?

A. Yes, sir.

X Q. 29. You do not shut down the machine between hatches, do you?

A. No, sir.

X Q. 30. When you come to clean your machine, you do not shut the machine down after a hatch and clean it and then start it up again with the Smith machine?

A. You can start the fans off for a short period to pick up the down with the vacuum cleaners. Some do and some do not. At the present time, we recommend that they do.

X Q. 31. But you do not shut the machine down completely and clean it out, everything, and take the eggs out between hatches?

A. No, sir.

X Q. 32. In the defendants' incubators and hatchers, particularly in connection with the hatchery, after the hatch [fol. 126] is taken off of the separate hatcher, all the eggs are taken out of the hatcher?

A. Yes, but not out of the 26.

X Q. 33. And the eggs are taken out of the hatcher?

A. Out of the hatcher, but not out of the incubating unit.

X Q. 34. Let us confine ourselves to the hatcher.

Mr. Ely: There is no use going into detail on that.

X Q. 35. Will you tell me whether all the eggs are taken out of the defendants' hatcher after a hatch?

A. Yes.

X Q. 36. And after they are taken out the hatcher is cleaned out and the hatcher has a sanitary provision applied to it?

A. Yes, sir.

X Q. 37. And then later they put in a new batch of eggs and they are again hatched?

A. Yes, sir.

X Q. 38. And they are again cleaned out?

A. Yes, sir.

Mr. Toulmin: That is all.

Redirect examination.

By Mr. Ely:

R. D. Q. 39. In the operation of the Smith, you clean out, fumigate, and when you move your eggs down to the next hatch, it is all clean down underneath there?

A. Yes, sir.

Mr. Ely: Supplementing my objection to Mr. Toulmin's remarks, of course there is no claim that the hatcher is in issue.

The Court: I understand that.

(Witness excused.)

The Court: Any further evidence?

Mr. Ely: No.

Mr. Toulmin: No.

[fol. 127] PLAINTIFF'S EXHIBIT No. 19

IN THE UNITED STATES DISTRICT COURT, DISTRICT OF CONNECTICUT

In Equity. No. 2369

SAMUEL B. SMITH, Plaintiff,

vs.

A. B. HALL and L. C. HALL, d. b. a. HALL BROTHERS, Defendants

AFFIDAVIT OF JOSEPH I. TAGGART

STATE OF OHIO,
County of Cuyahoga, ss:

Joseph I. Taggart, being first duly sworn, deposes and says as follows:

I am a resident of Cleveland, Ohio, and Assistant General Manager of The Smith Incubator Company, which is a corporation of Ohio, owned and controlled by Samuel B. Smith, the inventor and owner of the patent in suit and plaintiff in this cause. I have been connected with the plaintiff and The Smith Incubator Company since the year 1923 in various capacities, and am thoroughly familiar with all phases of incubation, both from the commercial operation of hatcheries and from the technical or biological facts of incubation. Prior to my connection with the plaintiff I was a graduate of Ohio Wesleyan University, where I specialized in zoology and studied incubation from the theoret- [fol. 128] ical side there. I have continued the intensive study of this subject since that time to the present.

I am thoroughly familiar with the Smith patent in suit No. 1,262,860, having testified as a practical expert with respect to said patent in a large number of patent suits involving the same. I testified for the plaintiff, as expert, on this patent in the case of Smith v. Snow, the decision of the Circuit Court of Appeals of the Eighth Circuit therein being reported at 70 F. (2) 564. I also testified for the plaintiff, as expert, on the patent, in the case of Waxham v. Smith in the Circuit Court of Appeals of the Ninth Circuit, reported at 70 F. (2) 457.

A copy of the Smith patent in suit herein is attached hereto and marked Exhibit 1.

The two cases referred to above were recently decided in the Supreme Court of the United States on writs of certiorari to the Eighth and Ninth Circuits, that Court holding the patent valid and infringed in both cases. Copies of the decisions of the Supreme Court in the Snow and Waxham cases are attached hereto and marked Exhibits 2 and 3, respectively.

I have been informed and believe that the defendants, A. B. Hall and L. C. Hall, conduct a hatchery at Wallingford, New Haven County, Connecticut, under the name and style of Hall Brothers, at which place they are engaged and doing business in the commercial incubation of eggs. I visited the place of business of the defendants May 23, 1934. At that time I inspected the several incubators which were then located in the defendants' hatchery. Mr. A. B. Hall, one of the defendants herein, showed me around the plant, and I discussed with him the construction and mode of oper-
[fol. 129] ation of the incubators in the plant.

The defendants had, at that time, a capacity of approximately 600,000 eggs in the incubators in the plant. As it was then late in the hatching season, only about half of this capacity was then in operation, but Mr. Hall told me that, during the height of the season, all of the capacity was used. The incubators which the defendants were then using are what are known as Robbins Incubators, with the construction and mode of which I am familiar as an incubator placed upon the market by The Robbins Incubator Company of Denver, Colorado, which is, I am informed, owned and operated by John L. Robbins of Edgewater, Colorado. In my conversation with Mr. Hall he advised me that the method of operating these incubators was the same as recommended by the manufacturer.

The defendants had in their plant the following Robbins Incubators, as designated by the model number applied by the manufacturer:

3–#17
4–#23
Approx. 16–#26I (or #26-I)

These incubators are substantially alike in construction and method of operation, the principal differences being

that, in the models #17s and #23s, the eggs are retained within the same cabinets during the full twenty-one day hatching period, while in the #26Is the eggs are removed on the eighteenth day, or just prior to the completion of incubation, when the chicks are ready to emerge from the [fol. 130] shells, whereupon they are placed in separate cabinets for the actual emergence of the chicks.

For the purpose of illustrating the construction and mode of operation of all of these incubators, I have selected the #26I incubator, shown in exhibit drawings attached hereto. Exhibit 4 is a vertical cross-section at the side of an egg rack. Exhibit 5 is a longitudinal vertical section on the line A-A of Exhibit 4. Exhibit 6 is a similar section on the line B-B of Exhibit 4.

I also attach hereto, as Exhibit 7, photostatic copy of pages 44 and 45 of Robbins Incubator Manufacturing Company's Catalogue which shows two of these Model 26I incubators (at the left) in conjunction with the cabinet (at the right) in which the eggs are placed at the close of the hatching period, as explained above. The descriptive matter contained on the same page is noted, as the manufacturer there states that these #26I incubators operate upon the same principle as the incubator involved in the Waxham suit, referred to above.

For the purpose of comparison with the structure involved in the Waxham suit, I attach hereto, as Exhibits 8, 9 and 10, photographs of the Robbins #23 Incubator which was involved in that suit. Exhibit 11 is a photostat of page 12 of a Robbins Catalogue, illustrating the #23 incubator showing the tilting drum or rack with the egg trays removed. This view shows, at the rear, the fans used in that incubator, and Exhibit 12 is a photostat of another page of the Robbins Catalogue which shows the fans removed from the incubator. The tilting drum (at the right of Exhibits 8, 9 and 10) is set with eggs set in staged incubation at semi-weekly intervals. At the eighteenth day [fol. 131] the oldest eggs are removed and placed in the stationary racks at the left.

The construction and mode of operation of the fans in the #26I incubator is the same as that in the Robbins Model #23, which was held by the Supreme Court to infringe upon the Smith patent. The fans in the #26I are so designated in Exhibits 4 and 6. Small, fresh air inlets are located

at the rear wall back of the fans, and similar outlets in the ceiling. This is identical with the #23 incubator. The percentage of interchange of fresh and foul air, through those openings in the 26I, is about ½ of 1%, or the same as in the Robbins #23. The eggs in the #26I are arranged in trays in the tilting drums shown in Exhibits 4 and 5, which are identical with the drums in the #23. The fans in the 26I draw the air through the egg drums and discharge it centrifugally along the walls, floor and ceiling, where it moves forwardly, strikes the front wall, and is then drawn back through the drums. This movement of air is identical with that in the #23 described by the Supreme Court on page 2 of Exhibit 3:

"There is no central corridor, the tiers of egg trays being placed in or near the center of the chamber- There are no curtains or similar means of guiding the air currents set in motion by the fans. Two fans are placed on the side wall at the back of the chamber. They turn continuously, and are so constructed and operated as to propel currents of air, which proceed along the sides and the ceiling and [fol. 132] floor of the chamber to the front wall, where they are deflected in the direction of the fans and there 'drawn' toward them through the central part of the chamber. Less than 1% of the air passes out through the foul air exits in the course of making the described circuits, so that there is circulation and recirculation of the air within the chamber. The evidence supports the finding of the special master and of the two courts below that the currents of air set in motion by the fans flow continuously along defined paths.

"The petitioner's machine thus employs every essential of the patented method as it is defined by Claim 1."

I discussed with Mr. Hall the manner in which the eggs were set in the operation of the defendants' incubators. He advised me that the defendants set their eggs by setting one-sixth of the capacity of each drum at semi-weekly intervals. When the drums are filled in this manner each drum contains eggs in six stages of incubation, ranging from newly set eggs to eggs which have been in the incubator eighteen days, and in which the embryo is about ready to chip the shell. These oldest eggs are removed on the eighteenth day and replaced by newly set eggs, so that at all

times staged incubation is being practised. As the eggs in the drum are in all the different stages of embryo development, about one-half of the total egg content of the incubator will be "endothermic" or in the heat absorbing stage and the other half in the "exothermic" or heat generating [fol. 133] stage. No particular order or arrangement of the eggs as to age is observed or followed. The placing of the eggs on the eighteenth day in a separate chick producing cabinet does not affect the operation, which is the same as carried on in the incubating drum in the #23 incubator. As was said by the Supreme Court in the Waxham case (Ex. 3, p. 1):

"Petitioner's incubator differs only in unimportant mechanical details from the infringing machine in the Snow case. In it the eggs are set in staged incubation, at different levels, but in no particular order. They are subjected to circulation of heated air, set in motion by fans, which carries heat units from the warmer to the cooler eggs and maintains the air throughout the chamber at substantially uniform temperature."

The method of setting the eggs in the incubating drum, and the manner and means for propelling the air through those eggs in the #26I Incubator is identical with the operations in the #23.

The method of incubation originated by Smith, and set forth in the patent in suit, and particularly in claim 1 thereof, has been fully described in the opinion of the Supreme Court in Smith v. Snow (Ex. 2), and I will not discuss the same except insofar as it relates particularly to the practise of the defendants.

Attached hereto and marked Exhibit 13, is a chart or graph showing the development of heat units in the egg during the entire twenty-one day hatching period. The heat units developed in an individual egg are shown by the [fol. 134] curved line labeled "Heat Units". As shown therein, the generation of heat starts at about the fifth day and continues in an upward curve to the eighteenth day when there is a short period when there is no increase, and then increases to the last day. On the eighteenth day the heat developed by each egg in a day is slightly more than 2½ large calories. The red line at the base of the chart indicates the heat units absorbed by the egg due to

necessary slow evaporation of the water content of the egg. As will be seen, the amount of heat which is absorbed by the egg during the first ten or eleven days is greater than the amount of heat given off during that period. After the tenth or eleventh day, the heat given off by the egg is in excess. For this reason the eggs are said to be "endothermic", or heat absorbing, during the first ten or eleven days, and "exothermic", or heat generating, thereafter. The area colored blue represents heat units absorbed, and the area colored red the heat units given off. The darker shade of red indicates the heat units which are given off by an egg after it passes into the "exothermic" phase and up to the eighteenth day (at which time the defendants transfer the eggs to the chick producing cabinet). The comparative areas of the blue and dark red portions of the chart demonstrate that approximately 2½ times as much heat is given off by the eggs from the tenth (or eleventh) day to the eighteenth day, as is absorbed by the eggs in the earlier stages of incubation.

The defendants, by transferring the eggs to another compartment at the eighteenth day, do not lose the beneficial [fol. 135] results obtained by arranging the eggs in staged incubation in a chamber in which the air is circulated with sufficient velocity to equalize the temperature of "endothermic" and "exothermic" eggs. The defendants operate and use the invention of the Smith patent by the use of the Robbins #26I Incubators in the procedure stated. The defendants employ a substantial copy of the Smith method, and do not avoid infringement by segregating the eggs which are at the end of the hatching period by placing them in a separate cabinet.

Referring particularly to claim 1 of the patent (Exhibit 1):

The defendants hatch "a plurality of eggs" by the use of the Robbins #26I Incubators. The eggs are arranged "at different levels," as is shown by the arrangement of the trays (Exs. 4 and 5). The operations of the defendants are carried on in "a closed chamber having restricted openings of sufficient capacity for the exhaust of foul air without undue loss of moisture." The defendants apply to the eggs "a current of heated air" created by the fans and [illegible] "by means other than variations of temperature." The current of air thus created circulates over and over through

the eggs in repeated cycles or circuits. The current of a
is "of sufficient velocity to circulate, diffuse and maint
the air throughout the chamber at substantially the sa
temperature." The air in the defendants' incubators
"vitalized" and the "moisture conserved." By the
circulation and recycling of the air "the units of heat w
be carried from the eggs in the more advanced stage of i
cubation to those in a less advanced stage." The incubat
[fol. 136] operates "for the purpose specified" in the Smit
patent, namely, the incubation and hatching of eggs.

Nor do the defendants avoid the use of the Smith pro
ess by removing the eggs from the drum after th
eighteenth day of incubation, for in the drum are foun
eggs in different stages of incubation, both "endothermic"
and "exothermic," so that the equalization of temperatur
between the cooler and warmer eggs is carried on at a
times, and units of heat are carried from eggs in the "mo
advanced" stage of incubation to "those in a less advanced
stage," as called for by claim 1.

The Smith patent has been held valid by various Court
of Appeal and by the Supreme Court, as noted on page
of Exhibit 2. I have examined the Answer filed herein, an
have examined the prior patents set up in paragraph XV
thereof. The major part of the said patents have been co
sidered in one or more of the several litigations on th
Smith patent, and have been held not to anticipate the pa
ent. Such additional patents as are cited do not add any
thing to the prior art which has been repeatedly considered.
The last three publications cited in this paragraph wer
considered in the Snow case and held not to anticipate th
Smith patent.

The first three publications referred to in the same para
graph, and the alleged prior use and publications, referred to
in paragraphs XVII and XVIII, relate to the so-called Has
ings' prior use, and have been considered in the cases o
Wolf v. Buckeye, 296 F. 680 and Buckeye v. Cooley, 17 F.
(2) 453, and held not to anticipate the Smith patent. Th
[fol. 137] prior uses and publications in paragraph XVI o
the Answer relate to the alleged prior use by the patente
Smith, and have been considered in substantially all of th
cases involving the Smith patent, and particularly in th
Snow and Waxham cases. This alleged prior use is n

ferred to by the Supreme Court in the Snow case and held not to anticipate (Ex. 2, p. 8).

The alleged Lawry and Fullington uses, referred to in Paragraphs XIX, XX and XXI of the Answer, were in the Waxham case and rejected by the Circuit Court of Appeals of the Ninth Circuit in Waxham v. Smith, 70 F. (2) 457. A copy of this opinion is attached hereto marked Exhibit 14, particular reference being made to pages 3 and 4 thereof in this respect.

The allegations of paragraphs XXII, XXIII, XXIV and XV were disposed of by the Supreme Court in the Snow and Waxham decisions (Exs. 2 and 3).

There is no defense raised in the Answer that has not been previously considered and rejected by one or more Circuit Courts of Appeal and by the Supreme Court.

The patent in suit expires April 16, 1935. The infringement by the defendants is continuing and is threatened to continue unless enjoined by this Court. I am informed, and believe, that since my visit to the plant of the defendants they have added to their equipment by the purchase and use of a large number of additional incubators of approximately 125,000 egg capacity, of the same style as the #26I described herein. It is very important and urgent that the question of infringement by the defendants be determined at once, and that an injunction issue against the defendants [fols. 138-144] before the beginning of the hatching season, which will start about February 1, 1935. Users of the Robbins incubators and users of similar incubators in all parts of the country are persisting in infringement by the use of incubators operating upon the same principle as the defendants' incubators, and it is essential to the enforcement of the Smith patent that the questions here involved be decided as soon as possible. The damage which is being done to the plaintiff is serious and irreparable, and unless the infringement can be enjoined at once the loss to the patentee may not be recovered.

Joseph I. Taggart.

Sworn to and subscribed before me this 19th day of January, 1935. (Signed) Walter C. Kelsey, Notary Public. Com'n Expires Mar. 15, 1937. (Seal.)

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Exhibit 1, Smith patent No. 1,262,860, omitted in printing as it appears at side folio 951 of the James record.

[fol. 145] EXHIBIT 2—WALTER C. KELSEY

IN THE SUPREME COURT OF THE UNITED STATES, OCTOBER TERM, 1934

No. 102

SAMUEL B. SMITH, Petitioner,

vs.

E. H. SNOW and E. H. SNOW, Doing Business as SNOW'S HATCHERIES and SNOW'S INCUBATOR COMPANY

On Writ of Certiorari to the United States Circuit Court of Appeals for the Eighth Circuit

(January 7, 1935)

Mr. Justice STONE delivered the opinion of the Court:

Certiorari was granted, — U. S. —, to review a decree of the Circuit Court of Appeals for the Eighth Circuit, 70 F. (2d) 564, which reversed the decree of the district court and held valid, but not infringed, the first claim of the Smith Patent, No. 1,262,860, of April 16, 1918, for an improved apparatus and method for the incubation of eggs.[1] The [fol. 146] Court of Appeals for the Ninth Circuit held the same claim valid and infringed in Waxham v. Smith, 70 F. (2d) 457, in which case certiorari was also granted, —

[1] The patent has been extensively litigated. Claim 1 has been held valid and infringed in Buckeye Incubator Co. v. Wolf, 291 Fed. 253, aff'd 296 Fed. 680 (C. C. A. 6th); Buckeye Incubator Co. v. Cooley, 17 F. (2d) 453 (C. C. A. 3rd); Miller Hatcheries, Inc. v. Buckeye Incubator Co., 41 F. (2d) 619 (C. C. A. 8th); Smith v. Jensma, 1 F. Supp. 999 (D. C.); Waxham v. Smith, 70 F. (2d) 457 (C. C. A. 9th). It has been held valid, but not infringed, in Buckeye Incubator Co. v. Blum, 17 F. (2d) 456, aff'd 27 F. (2d) 33 (C. C. A. 6th); Buckeye Incubator Co. v. Petersime, 19 F. (2d) 721 (C. C. A. 6th); Buckeye Incubator Co. v. Hillpot 22 F. (2d) 855, aff'd 24 F. (2d) 341 (C. C. A. 3rd); Boli v. Buckeye Incubator Co., 33 F. (2d) 347, reversed on oth grounds, 46 F. (2d) 965 (C. C. A. 6th); Snow v. Smith, F. (2d) 564 (C. C. A. 8th).

U. S. —. The question thus presented is one of the scope of the claim.

Only so much of the patent as relates to a method for incubation is now involved. Correct appreciation of the contentions made requires a brief exposition of the well-known phenomena which attend the incubation of eggs under natural conditions.

The period for hatching eggs of the domestic hen is twenty-one days. The eggs are cold at the beginning of the period of incubation, although at that time generation has already progressed slightly. Continuation of this process and successful incubation depend upon the application of heat to the eggs, and the maintenance of their temperature at not less than body heat, about 100° F., and not more than 105° F. Any substantial divergence from this range of temperature results in deterioration or death of the embryo, and consequent failure of the hatching process. If the temperature is maintained within this range, the eggs during the first ten days of the period absorb heat required to generate and maintain the life of the embryo. The eggs are then said to be endothermic or heat absorbing. From [fol. 147] the eleventh day until the end of the period the embryo has developed to a point at which the egg generates more heat than is needed to keep the embryo alive. They are then said to be exothermic. From that time on the excess heat is given off to the surrounding air or to objects in contact with the eggs, if at a lower temperature than the eggs.

The development of heat accompanies the oxidation of food elements within the egg, in consequence of which it gives off carbon dioxide during the period of incubation and absorbs oxygen from the external air, both of which pass through the shell of the egg and its lining membrane. During the period of incubation there is also gradual evaporation of moisture from the egg, which tends to reduce its temperature slightly. The best results are obtained if the total evaporation during incubation does not exceed about 15%. Evaporation in excess of that amount affects the embryo adversely, the chick when hatched being undeveloped and lacking normal strength.

Successful artificial incubation therefore involves conformity to three principal requisites; the maintenance of proper temperature during the period of incubation, the

prevention of excessive evaporation of moisture, and the supply of an adequate amount of oxygen, which involves also the removal from the incubator of the carbon dioxide which results from oxidation of the contents of the egg.

The artificial incubation of eggs is an ancient art. It appears to have been known to the Egyptians two thousand years ago, and for a comparable period to the Chinese. [fol. 148] Until Smith, the patentee, carried on his experiments, the effort had been generally to reproduce as nearly as practicable the natural conditions of incubation. In practice eggs, in relatively small number, seldom more than three hundred and usually less, were placed, on the same level, in a cabinet with heating means above the eggs, so that the temperature above the eggs was maintained at a higher point, about 103° F., than that below. To secure the requisite exposure of the eggs to the higher temperature, it was necessary, in the course of incubation, to turn the eggs frequently, as is done by the hen in nature. Provision was made for supplying fresh air to the cabinet and for humidifying the air within the cabinet. All incubators were of the still air type; that is to say, the only movement of air within the incubator was that caused by variations of temperature at different points within the cabinet, resulting in some transmission of heat by radiation or convection. The opinion seems to have prevailed that the presence of currents of air either within or surrounding the cabinet was harmful. Successful operation of this method required nice adjustments of the heating means so as to avoid overheating as the eggs passed into the more advanced stages of incubation, reaching their highest temperature about the seventeenth day.

Smith conceived the idea, embodied in his patent, of setting the eggs in staged incubation within the cabinet and applying to them, in convenient arrangement for that purpose, a current of heated air, propelled by means other than convection. Staged incubation is the successive setting of eggs in the same cabinet at brief intervals of about [fol. 149] three days. At the twenty-first day there would thus be several settings of eggs in the incubator, each at a different stage of incubation, part in the endothermic stage and part in the exothermic. Smith arranged the egg trays or racks in tiers, so that air could be freely circulated among the eggs. He subjected them to a continuous cu

rent of air of the requisite constant temperature of about 100° F., propelled by a fan so that it would circulate freely and repeatedly throughout the cabinet. The heat of the eggs in the later stages of incubation was thus carried by the circulating air of lower temperature to the cooler eggs, in the earlier stages, so that there was a continuous tendency to equalize the temperature throughout the cabinet at approximately the temperature of the introduced current of air.

Before Smith there had been efforts to set eggs in staged incubation, but without practical success, because of the difficulties of securing adequate heat distribution within the incubator. He was the first to apply mechanically circulated currents of air to eggs so arranged. He followed this procedure in conjunction with the use of a restricted opening for the elimination of foul air. By this combination the difference in temperature of the eggs was equalized within the desired range throughout the incubator during the period of incubation, the air within the incubator was gradually replaced by fresh air, and the moisture of the eggs was conserved. His method thus solved the major problems of artificial incubation in a highly efficient manner. It was novel and involved invention. See The Barbed Wire Patent Case, 143 U. S. 275, 283; Krementz v. [fol. 150] The S. Cottle Co., 148 U. S. 556, 559, 560.

That it was invention is not seriously disputed here, and of the many courts which have passed on the patent none has denied its validity. The new method had certain marked advantages over earlier ones. It was possible to carry on the process of incubation continuously by placing fresh eggs in the incubator at intervals, as those of the most advanced stage hatched and the new born chicks were removed. It was possible to apply heated air to the eggs at a constant temperature, thus avoiding the necessity of varying by nice adjustments the temperature of the applied air, so as to conform to the varying temperatures of the eggs as they passed through successive stages of incubation. As the egg racks or trays could be placed in tiers, instead of on a single level, it was possible to arrange them more compactly and greatly increase the number of eggs in a single incubator. Before staged incubation, as developed by Smith, it had not been practicable to operate incubators of a capacity of more than about three hundred

eggs. By use of the new method it is possible to operate successfully an incubator containing as many as 52,000 eggs, and the percentage of eggs successfully hatched by artificial incubation has been materially raised.

The commercial success of the new method was immediate and striking. At first the inventor devoted himself to developing his own hatchery for the use of the new method; it was the largest in existence, with a capacity of over 1,000,000 eggs. In 1922 he began the manufacture and sale of the new incubator. In ten years he, and a corporation [fol. 151] which he had organized for the purpose, had made sales of incubators aggregating about $24,000,000, having a total egg capacity of over 188,000,000. The old type of incubation, with eggs arranged at a single level, all in a single stage of incubation, had thus become obsolete.

That the method employed in the Smith type of incubator was novel and revolutionary in the industry is not challenged. The question presented here is what scope may rightly be given to Claim 1 of the patent; whether the petitioner has drafted it in such form as to secure the fruits of his invention. Claim 1 reads as follows:

"1. The method of hatching a plurality of eggs by arranging them at different levels in a closed chamber having restricted openings of sufficient capacity for the escape of foul air without undue loss of moisture and applying a current of heated air, said current being created by means other than variations of temperature and of sufficient velocity to circulate, diffuse and maintain the air throughout the chamber at substantially the same temperature, whereby the air will be vitalized, the moisture conserved and the units of heat will be carried from the eggs in the more advanced stage of incubation to those in a less advanced stage for the purpose specified."

It will be observed that the claim, standing by itself, asserts the essential elements of the method of incubation to be: (a) the arrangement of the eggs at different levels in staged incubation in a closed chamber, having restricted [fol. 152] openings of sufficient capacity for the escape of foul air without undue loss of moisture; (b) the application to the eggs of heated air in a current created by means other than variation of temperature; and (c) as marking the boundaries of the claim, the current of air is to be

sufficient velocity to circulate, diffuse and maintain the air throughout the chamber at substantially the same temperature whereby the air will be vitalized, moisture conserved, and the units of heat carried from the eggs in the more advanced stage to those in the less advanced.

To avoid petitioner's charge of infringement two main contentions are pressed by respondents. First, that Claim 1 is restricted to an arrangement of the eggs in such order with respect to the direction of the propelled current of heated air that it will first come in contact with the more advanced eggs. Thus construed, respondents do not infringe, as concededly the movement of air within their incubator does not pass to the eggs in staged incubation in any particular order. Second, that the movement of air in respondents' incubator, produced by the agitating action of fans or propellers, does not result in "a current of air" traveling in a constant predestined path within the meaning of Claim 1. In passing upon these contentions it is necessary to ascertain the proper scope of Claim 1, and to determine whether the characteristic features of respondents' incubator come within its scope. Respondents maintain that the claim is restricted in its scope in the manner indicated above (a) by the disclosures of the patent itself, (b) by the prior art, including the patentee Smith's own [fol. 153] prior public usage, and (c) by estoppels arising from the file wrapper record of the patent.

1. The court below rested its decision on its interpretation of Claim 1, read in the light of the disclosures of the patent, as restricting the patented method to a particular arrangement of the eggs, whereby the current of heated air, after being introduced into the cabinet, first comes in contact with the eggs in the most advanced stage of incubation. It reached this conclusion by comparison of that part of the claim, which speaks of the units of heat as being "carried from the eggs in the more advanced stage of incubation to those in a less advanced stage," with the specifications, which disclose an arrangement of the eggs such that the introduced current of heated air first passes to the more advanced eggs. As respondents' incubators have no such arrangement of the eggs, and as in consequence the forced draft of heated air does not reach the eggs in any particular order, the court held that the respondents do not infringe Claim 1.

The patentee, obedient to the command of the statute (R. S. § 4888), gave such description of the manner of using his discovery as would enable others skilled in the art to use it. The specifications first describe generally the method by which the eggs in staged incubation are arranged in tiers and subjected to forced circulation of heated air through the incubating chamber. The patent states: "The temperature of circulating air should be such as will prevent the eggs in the early stage of incubation from falling below 100° and the speed of velocity of the circulating air [fol. 154] should be such as to carry the heat away from the eggs in the later stage of incubation and thereby hold the temperature of those eggs at 105° or slightly below that. It is manifest that the temperature will remain practically the same throughout the column of eggs, but the air is impelled with sufficient velocity to carry the heat away from the eggs which happen to be in the advanced stage of incubation." The drawings and specifications show the eggs arranged in tiers on either side of the chamber, with an open space or corridor between, at the top of which a revolving fan forces the air downward in the open space of the corridor. Above the fan is a valve-controlled air intake for the introduction of fresh air and above the trays of eggs on either side are shown "outlets for the release of foul air * * * of such restricted capacity as to prevent the undue escape of moisture."

It is true that drawings and specifications indicate a particular arrangement of the eggs from the top to the bottom of the tiers of trays, according to the stage of the incubating process, the eggs being arranged progressively from the least advanced, placed at the top, to the most advanced, placed at the bottom of the tiers. They indicate also that as the eggs most advanced are hatched, they are to be replaced by moving downward the trays containing the several successive settings of eggs which are in earlier stages of incubation. They also speak of a "column" of air of such speed as to keep the temperature substantially uniform, and show curtains hanging from the top of the chamber covering the ends of the trays on either side of the [fol. 155] corridor and extending to a point a short distance above the floor.

With this arrangement the air would be propelled downward to the floor of the chamber, gaining access to the eggs

by passing beneath the ends of the curtains to the trays of eggs at the bottom of the tiers. So much of the air as was introduced through the intake would thus reach the more advanced eggs first. It would then be deflected upward through the egg trays to the top of the chamber, and so much of it as did not pass out through the restricted capacity outlets located at the top of the tiers of trays would be returned to the fan to be propelled again through the described circuit.

We may take it that, as the statute requires, the specifications just detailed show a way of using the inventor's method, and that he conceived that particular way described was the best one. But he is not confined to that particular mode of use since the claims of the patent, not its specifications, measure the invention. Paper Bag Patent Case, 210 U. S. 405, 419; McCarty v. Lehigh Valley R. Co., 160 U. S. 110, 116; Winans v. Denmead, 15 How. 330, 343. While the claims of a patent may incorporate the specifications or drawings by reference, see Snow v. Lake Shore Railroad Company, 121 U. S. 617, 630, and thus limit the patent to the form described in the specifications, it is not necessary to embrace in the claims or describe in the specifications all possible forms in which the claimed principle may be reduced to practice. It is enough that the principle claimed is exemplified by a written description of it and of the manner of using it "in such full, clear, concise, and exact [fol. 156] terms" as will enable one "skilled in the art to make, construct, compound and use the same."

Here the specifications showed an arrangement of the eggs and a means of guiding the current of air so that it would reach the most advanced eggs first. But neither the arrangement nor the means of guiding the current of air are requisite to the application of the principle which Smith discovered and claimed. Without either, the heated air may be given, as Claim 1 prescribes, "sufficient velocity to circulate, diffuse and maintain the air throughout the chamber at substantially the same temperature whereby • • • the units of heat will be carried from the eggs in the more advanced stage of incubation to those in a less advanced stage." Claim 1 made no mention of curtains or any column of air or means of guiding the current of air, and the inventor made no claim for any particular arrangement of the eggs, except that they should be at different levels.

Moreover, while the specifications and drawings show particular arrangement of the eggs and a particular direction of the current, nowhere in specifications or claim, is stated either that the direction of the current is materi or, what is the equivalent, that the order in which it reach the eggs is material.

Only by resort to the assumption that heat units could not be carried from the more advanced to the cooler and less advanced eggs, unless the initially introduced air first came in contact with the more advanced, is it possible to support the conclusion of the court below and read the claim as calling for a particular arrangement which would [fol. 157] enable the air current to reach the advanced eggs first. Such, of course, would be the case only if the current of air were to make a single circuit, and either remain at its end in contact with the cooler eggs or pass out of the incubator altogether. Neither occurs in petitioner's machine, and there is no reason to suppose that either would produce the desired equalization of temperature. The specifications and claim both contemplate a continuous circulation of the current of heated air through the chamber, which, regardless of its direction, would continuously operate, by repeated contacts with the eggs in all stages, to equalize the temperature throughout the chamber by carrying heat units from the warmer to the cooler eggs.

The claim conforms to the specifications in prescribing "restricted openings of sufficient capacity for the escape of foul air without undue loss of moisture." The amount of foul air allowed to escape through the outlet of restricted capacity necessarily controls the amount of air taken in. In petitioner's commercial machines, regulated to produce the prescribed result in air vitalization and conservation of moisture, the interchange of foul air for fresh is from 1% of 1% to 3% of the air content for each complete circuit of the chamber. This means that the air content of the chamber must make the circuit many times, theoretically from 33 to 200, before an equal volume of fresh air would be drawn in through the intake. Such continuous circulation of the air at constant temperature, lower than that of the more advanced eggs and higher than that of the less advanced, tends to produce the equalization of the temperature [fol. 158] of the eggs by flow of heat units from the warmer eggs to the cooler, regardless of the direction of

current in the circuit, and regardless of the particular stage of the eggs which it reaches first. With other factors constant, the efficiency of this equalization process would depend upon the velocity of the current. The statement of Claim 1 is that the current of air is to be "of sufficient velocity to circulate, diffuse and maintain the air throughout the chamber at substantially the same temperature." The specifications state: "It is obvious that the fans can be so arranged and can be operated at such speed as to cause the hot air to circulate fast enough to keep the temperature throughout the chamber between the limits of 100° and 105°."

It is evident that Claim 1 does not prescribe that the current of air shall be propelled by any particular means, except that it shall be by means other than variation of temperature, nor does it prescribe that the means of propulsion shall be given any particular location, or that the current of air shall be guided by any particular means or given any particular direction. The omission of these requirements from Claim 1 is the more pointed as the other claims of the patent speak in particular of a power-driven fan, of the location of the fan, of curtains and a partition obviously intended to give direction to the current of air, of a vertically directed current of air, and of air circulating from the bottom of the chamber into the parts of it occupied by the tiers of egg trays. Thus by striking and obviously intended contrast with other claims, Claim 1 covers broadly [fol. 159] the essential elements of the Smith invention as we have already described it. Symington Co. v. National Malleable Castings Co., 250 U. S. 383, 385; Lamson Consolidated Store Service Co. v. Hillman, 123 Fed. 416, 419 (C. C. A. 7th); Wm. B. Scaife & Sons Co. v. Falls City Woolen Mills, 209 Fed. 210, 214 (C. C. A. 6th).

Examination of the claim, in the light both of scientific fact and of the particular form in which the petitioner reduced the claim to practice as described in the specifications, makes it plain that the claim does not call for a particular order or arrangement of the eggs in staged incubation in the incubator, or that the propelled current should reach them in any particular order, or that it should be guided, controlled or directed by any particular means, or in any particular manner other than that it should be of sufficient velocity to produce the results prescribed by the

claim. If the matter were doubtful, it is plain from what has been said that the character of the patent and its commercial and practical success are such as to entitle the inventor to broad claims and to a liberal construction of those which he has made. Moreley Machine Co. v. Lancaster, 129 U. S. 263, 273-277; Eibel Co. v. Paper Company, 261 U. S. 45, 63; Winans v. Denmead, supra, 341. In such circumstances, if the claim were fairly susceptible of two constructions, that should be adopted which will secure to the patentee his actual invention, rather than to adopt a construction fatal to the grant, Keystone Manufacturing Co. v. Adams, 151 U. S. 139, 144, 145; McClain v. Ortmayer, 141 U. S. 419, 425.

[fol. 160] 2. We find nothing in the file wrapper defense to disturb our conclusion as to the correct interpretation of Claim 1. It is a familiar rule that a patentee cannot broaden his claim by dropping from it an element which he was compelled to add in order to secure his patent. I. T. S. Rubber Co. v. Essex Rubber Co., 272 U. S. 429, 443; Smith v. Magic City Club, 282 U. S. 784, 789, 790. But the file wrapper lends no support for the application of this rule to petitioner's Claim 1.

The history of Smith's application in the Patent Office is a long one. Four groups of method claims were successively presented to the Patent Office and three were successively rejected. The fourth group ultimately matured into Claims 1, 2 and 3 of the patent. It suffices to say that Claims 1 and 25 of the first group claimed broadly, "The method of hatching eggs by arranging the eggs in a column and applying heated air forced about the eggs, the heated air being adapted to the eggs in various stages of incubation," and "The method of hatching eggs by arranging the eggs in a column one above the other and forcing heated air through said column." In due course the broad claims thus asserted were modified and narrowed by the inclusion of new elements, until they appeared in the form of Claim 1 of the patent. But, as we have seen, none of these additions involve any particular order of arrangement of the eggs or any particular direction or control of the air current, except that the current is to be "of sufficient velocity to circulate, diffuse and maintain the air throughout the chamber at substantially the same temperature."

[161] It is an illuminating fact that the entire written argument filed in support of Claim 1, as it was finally presented to the Patent Office and allowed, makes no reference to any order or arrangement of the eggs, or to shifting the location of the eggs in the incubator, no reference to the location of the fan, the direction of the air current, or to curtains or partitions. The features emphasized were the superiority, over drafts caused by variations of temperature, of "current produced by mechanical means" applied to eggs in staged incubation arranged at different levels, the conservation of moisture, and the elimination of foul air by the restricted air outlets, all features of Claim 1 which are characteristic of both petitioner's and respondents' incubators. We find nothing in the file wrapper to suggest that any addition was made to Claim 1 to restrict the patent to any particular order of arrangement of the eggs or any particular direction or means of control of the current of air, other than its velocity, and nothing to estop the patentee from asserting that the claim is not restricted by such features. See Baltzley v. Spengler Loomis Mfg. Co., 262 Fed. 423, 426 (C. C. A. 2nd); National Hollow B. B. Co. v. Interchangeable B. B. Co., 106 Fed. 693, 714 (C. C. A. 8th). It is of no moment that in the course of the proceedings in the Patent Office the rejection of narrow claims was followed by the allowance of the broader Claim 1. Westinghouse Electric & Mfg. Co. v. Condit Electrical Mfg. Co., 194 Fed. 427, 430 (C. C. A. 2nd).

3. Claim 1 is not limited by the prior art. It is urged that there was disclosure by Smith by public use more than [162] two years before his application for the patent. At the time indicated he used commercially an incubator arranged in three completely separated compartments in each of which there was circulation of the air by a fan. But there was no staged incubation in any single compartment.

The German patent, Stulik, No. 155,917, issued in 1901, disclosed the arrangement of trays of eggs in staged incubation in an enclosed column or stack, with the endothermic lamp at the bottom. The eggs were subjected to a rising column of heated air, which was allowed to escape at the top of the chimney. There was no forced draft of air, no circulation or re-circulation of air, and in consequence no

carrying of heat units from the more advanced eggs at the top to the less advanced eggs at the bottom.

Other patents named, as Winkler, No. 286,756, of 1883, and Zimmer, No. 1,075,747, of 1913, show types of staged incubation, but made no use of a current of air propelled by means other than variations of temperature, and in other respects were so plainly impractical as to call for no extended discussion. This is true also of the description in the 1867 edition of Ure's Dictionary, 652-3, said to represent a method of incubation devised in 1777 by Bonnemain, a Frenchman, and not used since the French Revolution, by which eggs in staged incubation were placed in a closed room heated by hot water pipes, but without other means of producing currents of air. Such rudimentary experiments with isolated elements of Smith's combination did not anticipate his invention. See Smith & Griggs Mfg. Co. v. Sprague, 123 U. S. 249, 255.

[fol. 163] Other patents are cited showing varying types of incubators in which the eggs were placed at different levels, but in which the circulation of air through the incubating chamber by means other than variations in temperature is wanting.[2]

The Proctor & Knowles Patent, No. 426,321 of 1890, and the Schwartz Patent, No. 535,175 of 1895, for methods and apparatus for drying tobacco and other materials, as well as other procedures for ventilation, are so remote from the problems and procedure for hatching eggs as to call for no comment.

This history of the prior art serves to emphasize rather than to discredit the striking advance made by Smith in effecting the combination defined in Claim 1. More than the skill of the art was involved in combining and adjusting its elements in such fashion as to solve the major problems of artificial incubation. The prior art discloses no application of a continuously circulating current of air to eggs in staged incubation which would restrict Claim 1 with re-

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[2] Guerin, U. S. Patent, No. 3,019, March 30, 1843; Bassini & Heyden, U. S. Patent, No. 330,457, November 17, 1885; Van Keuren, U. S. Patent, No. 1,160,793, November 16, 1915; Bell, U. S. Patent, No. 691,837, January 28, 1902; Koons, U. S. Patent, No. 916,454, March 30, 1909.

spect to either to the arrangement of the eggs or the direction or control of the current of air.

4. There remains the question of infringement. The respondents' machine exhibits a closed chamber, with restricted outlet for the escape of foul air and an intake for [fol. 164] fresh air, with eggs arranged at different levels in staged incubation, with a fan-impelled movement of air which circulates and recirculates throughout the chamber. The air moves over and about the eggs, carrying the units of heat from the warmer to the cooler eggs, maintains a substantially uniform temperature throughout the chamber, vitalizes the air and conserves moisture.

As Claim 1 of petitioner's patent is not restricted to any particular order in which the current of air reaches the eggs, respondents do not avoid infringement by interspersing indiscriminately, as they do, the trays of eggs in different stages of incubation. Respondents' claim of non-infringement is thus reduced to the contention that their incubators do not employ circulating currents of air called for by Claim 1. Their emphasis is on the agitation of air in respondents' machine in such a manner that its movement does not follow defined paths through the chamber so as to answer to the description "current of air."

In respondents' machine fans or air propellers are located at either side of the chamber, about mid-way of its height, near the wall and between the wall and tiers of egg trays. They are constructed and operated in such fashion that the air is "drawn" by their action from the central corridor through the tiers of eggs toward the center of the propellers. There, by the centrifugal action of the propellers, it is thrown off the ends of the propeller blades toward the top, bottom and adjacent ends of the chamber. There it is deflected by ceiling, floor and ends of the chamber into the corridor, from whence it is, in due course, again drawn [fol. 165] through the tiers of eggs to the propellers. The propellers are operated, and the air moves, continuously. Since the main movement of the air at the top and bottom of the tiers is toward the center corridor, and since the fans draw in air through the middle of the tiers, there are dead spots in the space occupied by the tiers where the movement of the air is toward the corridor until it joins and is turned back by the current moving toward the propellers.

Claim 1, as already stated, does not call for a current of air moving in any particular direction. Assuming, without deciding, that it calls for a current of air so constant in its movement and direction as not to depart substantially from a well defined path, one would expect that a fan operating, as in respondents' machine, within a closed chamber under substantially constant conditions, would produce currents of air without substantial variations of path. No valid scientific reason or explanation is advanced for any different result. Extensive testimony and elaborate arguments are presented to support the contention that notwithstanding the application of force to the air within the closed chamber by the action of respondents' propellers, under practically constant conditions, the results produced are so variable that "the air goes where it 'listeth' "; they are not convincing. The conclusion is abundantly supported by evidence that there is a continuous movement of air from the blades of respondents' propellers toward the top and bottom and sides of the chamber, thence to the corridor and thence through the tiers of egg trays back to the propellers, and that this movement achieves the purpose [fol. 166] declared in Claim 1, "to circulate, diffuse and maintain the air throughout the chamber at substantially the same temperature." The trial judge so found.

That there is a mixture of the air and some confusion of its movement in the corridor, and that at different levels within the space occupied by the tiers of trays the movement is not in the same direction, is immaterial. It is enough that there is a movement of air in current form following substantially defined paths through the tiers of egg trays, sufficient to effect the desired transfer of heat units. Claim 1 does not prescribe that a current of air is to be maintained throughout the chamber. It calls for the application to the eggs of a current of air "of sufficient velocity to circulate, diffuse and maintain the air throughout the chamber at substantially the same temperature." This respondents accomplish by the currents of air set in motion either directly or indirectly by the movement of the blades of the propellers. The method is that of Smith. Respondents do not avoid infringement of the method by varying the details of the apparatus by which they main-

use of it. Cochrane v. Deener, 94 U. S. 780, 788; Tilghman v. Proctor, 102 U. S. 707, 730, 731.

Reversed.

[fol. 167] EXHIBIT 3—WALTER C. KELLY

IN THE SUPREME COURT OF THE UNITED STATES, OCTOBER TERM, 1934

No. 208

HERBERT H. WAXHAM, Doing Business as WAXHAM HATCHERIES, Petitioner,

vs.

SAMUEL B. SMITH and THE BUCKEYE INCUBATOR COMPANY

On Writ of Certiorari to the United States Circuit Court of Appeals for the Ninth Circuit

[January 7, 1935]

Mr. Justice STONE delivered the opinion of the Court:

In this companion case to No. 102, Smith v. Snow, decided this day, certiorari was granted, — U. S. —, to review a decree of the Court of Appeals for the Ninth Circuit, 70 F. (2d) 457, which affirmed the decree of the district court and held valid and infringed the first claim of the Smith Patent, No. 1,262,860, of April 16, 1918, for an improved apparatus and method for the incubation of eggs.

The issues here, as in the Snow case, are the scope of claim 1 and its infringement as rightly construed. For [fol. 168] reasons stated at length in the opinion in the Snow case, our decision as to the scope of the claim is the same as in that case. Petitioner argues that the claim, if thus broadly construed, is invalid, as an attempt to patent the function performed by the petitioner's incubator. See Hailton Iron and Locomotive Works v. Medart, 158 U. S. 77. It is said also that the function of the machine involves merely the application of the natural law that heat tends to flow from warm to cooler objects placed in proximity.

But the function which a machine performs, here the hatching of eggs, is to be distinguished from the means by which that performance is secured. It is true that Smith made use of the difference in temperature of eggs in different stages of incubation, and the flow of heat units from one to the other, in achieving the desired result. He did this by arrangement of the eggs in staged incubation and applying to them a current of heated air under the conditions specified by Claim 1. By the use of materials in a particular manner he secured the performance of the function by means which had never occurred in nature, and had not been anticipated by the prior art; this is a patentable method or process. Corning v. Burden, 15 How. 252, 267, 268; Risdon Iron & Locomotive Works v. Medart, supra, 77; Cochrane v. Deener, 94 U. S. 780, 788. A method, which may be patented irrespective of the particular form of the mechanism which may be availed of for carrying it into operation, is not to be rejected as "functional," merely because the specifications show a machine capable of using it. Expanded Metal Co. v. Bradford, 214 U. S. 366, 382-386; [fol. 169] Cochrane v. Deener, Supra, 787, 788; cf. Holland Furniture Co. v. Perkins Glue Co., 277 U. S. 245, 255, 256.

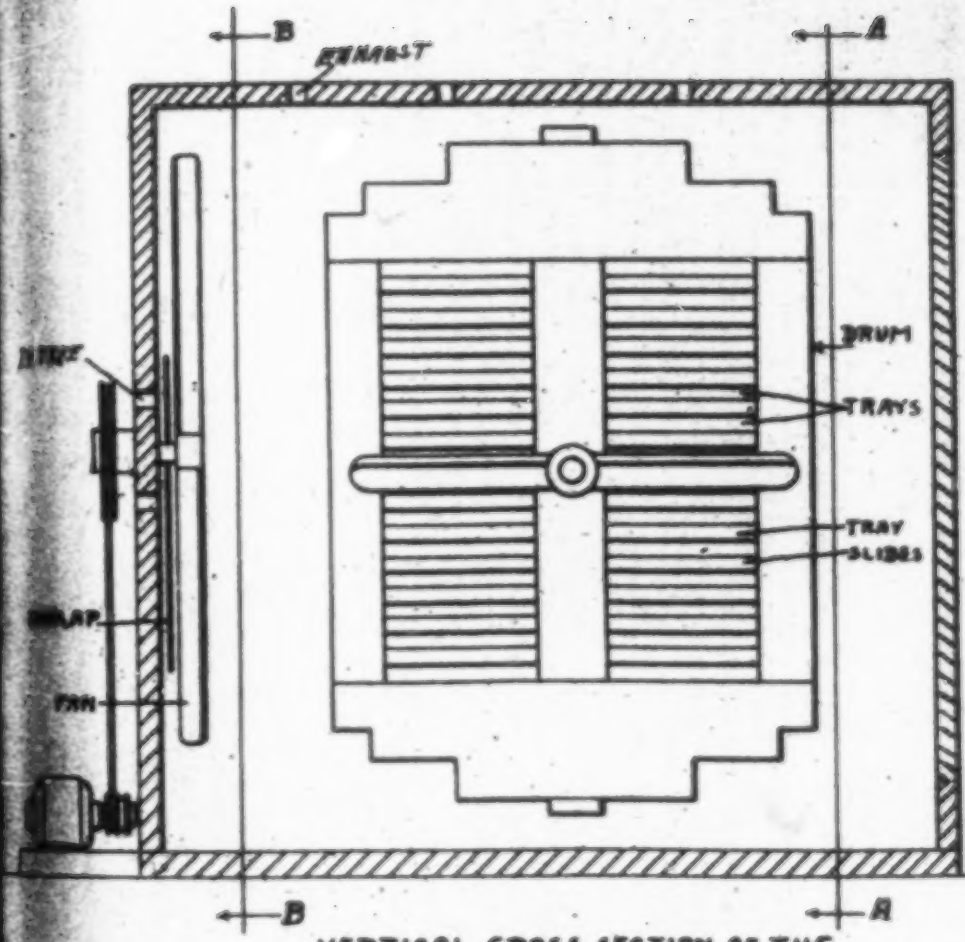
Petitioner's incubator differs only in unimportant mechanical details from the infringing machine in the Snow case. In it the eggs are set in staged incubation, at different levels, but in no particular order. They are subjected to circulation of heated air, set in motion by fans, which carries heat units from the warmer to the cooler eggs and maintains the air throughout the chamber at substantially uniform temperature. There is a fresh air intake behind the fans and openings in the ceiling for the exit of foul air. There is no central corridor, the tiers of egg trays being placed in or near the center of the chamber. There are no curtains or similar means of guiding the air currents set in motion by the fans. Two fans are placed on the side wall at the back of the chamber. They turn continuously, and are so construed and operated as to propel currents of air, which proceed along the sides and the ceiling and floor of the chamber to the front wall, where they are deflected in the direction of the fans and there "drawn" toward them through the central part of the chamber. Less than 1% of the air passes out through the foul air exits in the course of making the described circuits, so that there is circulation

and re-circulation of the air within the chamber. The evidence supports the finding of the special master and of the two courts below that the currents of air set in motion by the fans flow continuously along defined paths.

The petitioner's machine thus employs every essential of the patented method as it is defined by Claim 1. Petitioner [fol. 170] does not avoid infringement of respondent's method patent merely by employing it in a machine of different structure than respondent's, whether more or less efficiently. Winans v. Denmead, 15 How. 330, 344; Sewall v. Jones, 91 U. S. 171, 184; Cochrane v. Deener, supra, 789; Carnegie Steel Co. v. Cambria Iron Co., 185 U. S. 403, 441.

Affirmed.

171



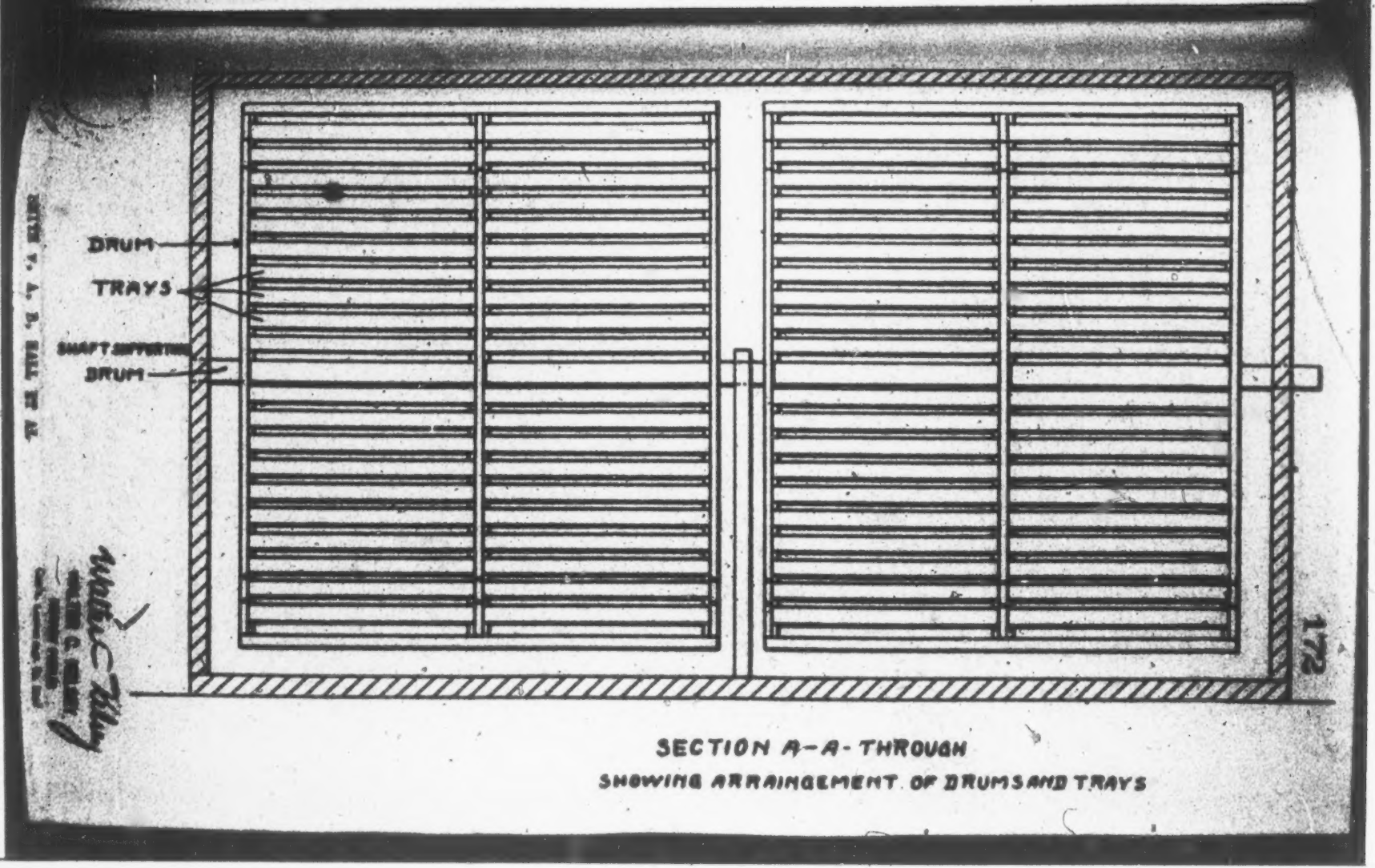

VERTICAL CROSS SECTION OF THE
ROBBIN INCUBATOR MODEL 26-1

SMITH v. A. B. HALL ET AL

exhibit -4

Walter C. Kelley

WALTER C. KELSEY




SECTION A-A- THROUGH

SHOWING ARRAINGEMENT OF DRUMS AND TRAYS

SECTION - B - B THROUGH
SHOWING ARRAINGEMENT OF FANS



Walter C. Kelsey
WALTER C. KELSEY
NOTARY PUBLIC

WALTER C. K... NOTARY PUBLIC
SMITH v. A. B. HALL ET AL.
exhibit -7-

# ROBBINS

## *Two Separate Incubators and One Hatcher in One Complete Unit--Total Capacity 72,000*

LOWEST COST EVER QUOTED FOR LIKE CAPACITY

# Multi-Incubator-Hatcher

...new unit is a new adaptation of Robbins ...of incubation. It consists of two mammoth ..., each with a capacity of 31,000, and a sep...cher with a capacity of 10,000—total capacity

...Incubator can be bought with one Hatcher, ...the second Incubator when needed. This plan ...the smaller hatchery to start using the multi... a minimum investment.

...Robbins Multi-Incubator-Hatcher uses the ...thods of temperature control, circulation and ... regulation as are now proven successful in ...bins models.

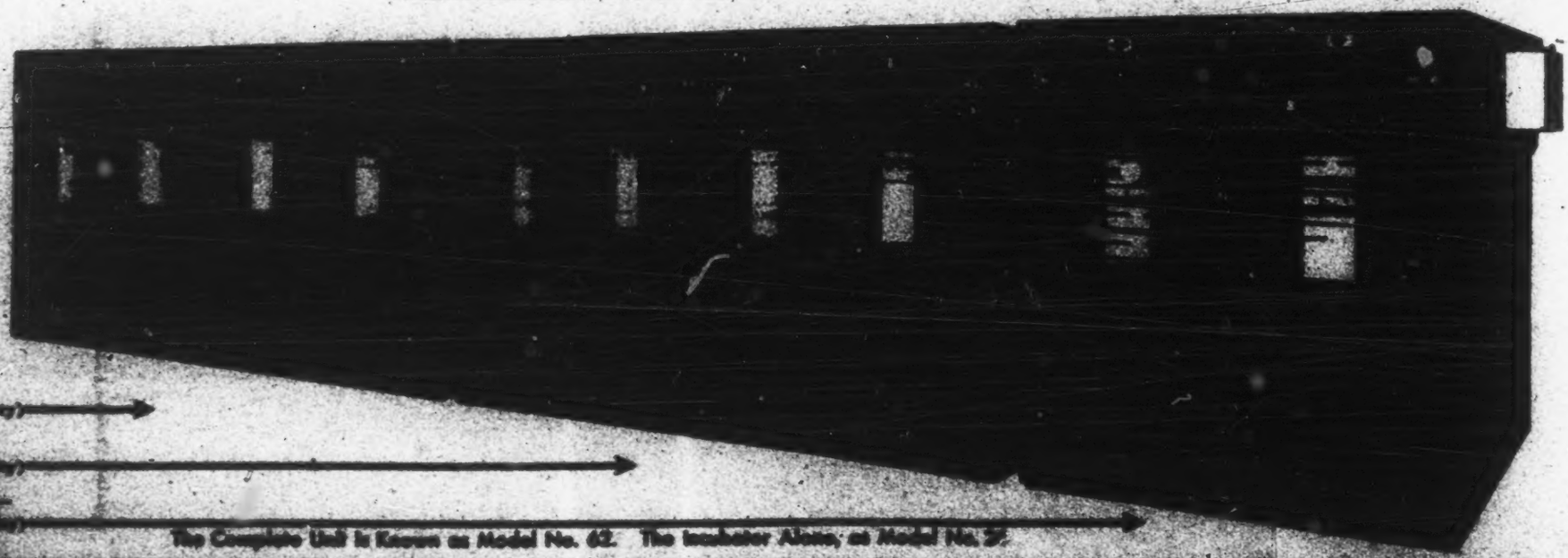
...bins electric Incubators are putting hundreds ...nds of dollars in the pockets of hatcherymen. ... multi-unit is an even more economical ar... t and may prove more popular than the ...models.

**THE LINCOLN HATCHERY,** Lincoln, Nebr., W. G. Lewis, Pres., Has Placed an Order for 14 Units of the Robbins Multi-Incubator-Hatcher, total capacity 1,008,000. The Lincoln Hatchery Already Owns and Operates 27 Model 23 Robbins Incubators

Every mechanical feature that has made the Robbins Incubator the hatching wonder of the world is incorporated in this new combination—even the new Humidifier-Cooler—which was shipped free and prepaid to every Robbins user during the spring (1930).

While no single principle of circulation, temperature control or humidity regulation is different from regular Robbins machines, the multi-unit has been thoroly tested and checked thru a season's hatching in our own experimental hatchery.

The illustration shows a complete unit of the Robbins Multi-Incubator-Hatcher. Each machine is operated entirely independently of the other, and the three cabinets may be arranged as desired.



The Complete Unit is Known as Model No. 62. The Incubator Alone, as Model No. 3...

175

exhibit -B-

176

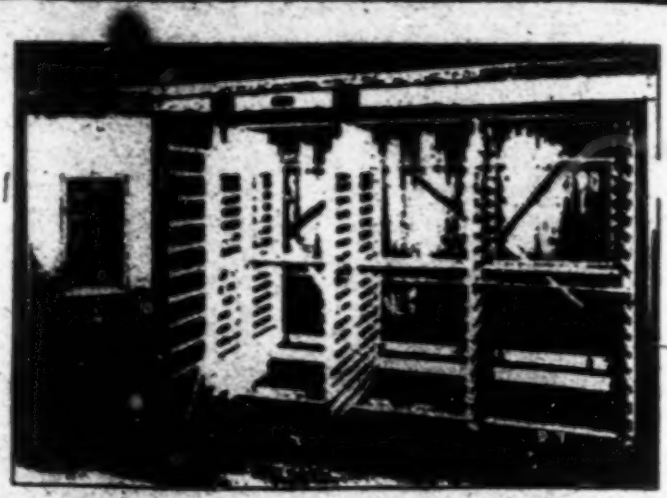
177

Exhibit -10-

178 WALTER C. KELSEY [illegible] SMITH v. A. B. HALL ET AL exhibit -11-

Walter C Kelsey

"IT'S A PROFITABLE PLEASURE TO OPERATE A ROBBINS"



HATCHERYMEN will study this picture with delight because it explains clearly some reasons why users say, "It is a pleasure to operate a Robbins."

The egg tray rack is shown here in an upright position. When the eggs are turned in one position the whole egg tray rack is tilted with the top forward and the bottom in. A few easy turns of the crank and this position is exactly reversed, swinging the bottom out and the top in. When the eggs are being removed or when getting ready to set new ones the rack is turned to an upright position.

The Robbins method of turning the eggs is safest because you do not have to look for stop pin holes on our turning device. Wherever you stop the entire load is safely locked—automatically.

Note that the top tray is within easy reach from the floor. With the exception of the two next to the top and the two next to the bottom, all trays are uniform in size and interchangeable. Even these four are alike in size and are interchangeable.

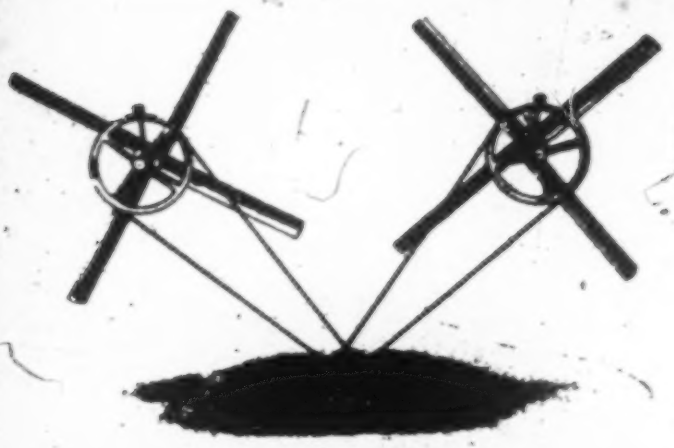
The hatching section at the extreme left in this picture is not closed off from the incubation section. Having the hatching trays at one end of the incubator is one of the great conveniences of the Robbins. The hatching trays are in the best possible position to handle easily and for quick and easy cleaning. The air circulation of the Robbins is so devised that the down or chick fuss is deposited on the floor at the front of the incubator.

With the hatching section at one end of the machine, the incubator is always clean; there can be no droppings or dirt on the egg tray frame, eggs or trays.

The testimonial letters of Robbins users reproduced on other pages of this catalog make frequent reference to the time saved and the convenience of operating these machines. The above explains why, in part.

WALTER C. KELSEY SMITH v. A. B. HALL ET AL 179
NOTARY PUBLIC Exhibit -II-
Walter C. Kelsey





## Accessibility of All Parts Save Time and Insures Against Costly Delays

BEFORE going into the subject of how the Robbins Circulator operates it is essential that you first understand our arrangement of the circulation equipment and our reasons for this arrangement.

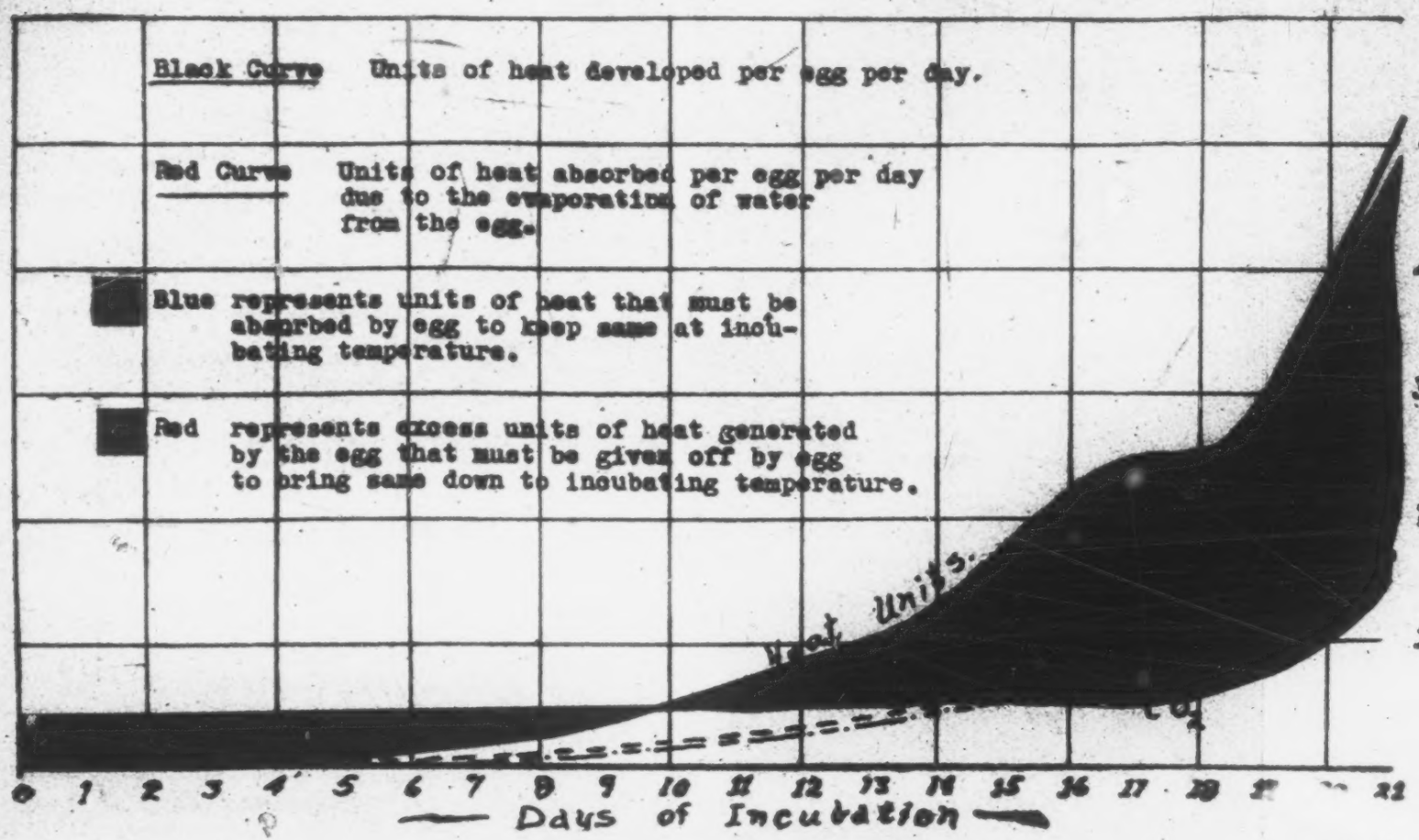
Motor Specifications: Models 14, 17, 19 and 22 are equipped with a ½ horse power Master motor, 110 or 220 AC or 220 DC. Models 4, 7 and 9 are equipped with a ¼ horse power Master motor, 110 or 220 AC or 220 DC.

Fan Specifications: The fans in Model Nos. 4, 7, 9, 14 and 17 have 22-inch blades; the fans in Model Nos. 19 and 22 have 27 and 25-inch blades; the Model Nos. 4, 7 and 9 have one fan; the Model Nos. 14, 17, 19 and 22 have two fans. The fans are just inside the back wall and directly behind the egg racks. The pulleys, belts and bearing others are mounted on the outside of the back wall. The motor is anchored on the floor directly behind the incubator, thus eliminating vibration.

Propellers are mounted on frictionless ball bearings and with occasional oiling (from the outside), will run indefinitely.

While the air circulation and ventilation apparatus may, and in all probability will, run for years without attention, it is exceedingly important to have it all accessible from the outside, as it is in the Robbins. Should repairs or adjustments become necessary on the Robbins, you can make them easily and quickly without disturbing the eggs. Without the steady running of the circulator, your hatch is ruined—and part of your hatching season may be lost if you have to take the machine apart for repairs. With the Robbins, you need not worry about this.

If you have never had a bearing stick, you may look upon this as of little importance. It is true, bearings may run for years without trouble. It is also true that bearings do sometimes stick after running only a few days. If a bearing "freezes" in an inaccessible place, tearing down the machine means ruin to your hatch. With the Robbins there are no inaccessible bearings.




Walter C. Kelly 19

WALTER C. KELLY

SMITH v. A. B. HILL ET AL

exhibit -15-

GRAPH SHOWING DEVELOPMENT OF HEAT UNITS DURING INCUBATION.

...above graph shows the heat development within an in-...ing egg during the 21 days of incubation. The heavy ... indicates heat units given off per egg per day. ... is shown in calories (.252 calories equal one B.T.U. ...er dashed curve indicates the amount of oxygen ...d. The lower dashed-dot curve shows the carbon-... given off. The oxygen and carbon-dioxide are ... in grams per egg per day.

...the first four days no heat is given off by the ... indicate that some heat is absorbed during ... From the fourth day heat is given off by ... which steadily increases with the exception of ... day. On this day the heat given off, and the ... consumed, hold steadily about as at the close of ... day. On the 18th day the increasing develop-... heat is resumed in earnest, and doubles between then and the time of hatching. There has been several explanations why the embryo apparently stands still during the 18th day. Probably the best explanation is that during the first 17 days the chick has been living off of the white of the egg while on the 18th day it begins to assimilate the yolk. This changing food diet probably causes readjustment which temporarily checks development.

The above graphs are the result of studies with calorimeters. The egg is placed within a calorimeter that is maintained at a constant temperature. Proper allowance is made for all heat radiated, and the heat generated within the egg can be measured. At the same time accurate check is kept on all air that passes in and out of the calorimeter, measuring the oxygen consumed and the carbon-dioxide given off. J. I. T. 3/22/30.

[131] EXHIBIT 14—WALTER C. KNIGHT

CIRCUIT COURT OF APPEALS, NINTH CIRCUIT

April 9, 1934.

No. 7154

...ERT H. WAXHAM, Doing Business as WAXHAM HATCHERIES, Appellant and Cross-Appellee,

vs.

...EL B. SMITH and THE BUCKEYE INCUBATOR COMPANY, Appellees and Cross-Appellants

...Appeal from the District Court of the United States ...the Southern District of California, Central Division

...ce Wilbur, Sawtelle and Garrecht, Circuit Judges

..., Circuit Judge:

...suit was brought by Samuel B. Smith, patentee, and ...keye Incubator Company, a licensee, under patent [132] No. 1,262,860, issued April 16, 1918, for an in..., against Herbert H. Waxham for the infringement ... patent by the use of an incubator known as Robbins ... incubator purporting to be manufactured under and ...nt to patent No. 1,728,980, issued September 24, ... J. L. Robbins. The matter was referred to a spe...ter who reported that the Smith patent was valid ... infringed. This decision was affirmed by the Dis...urt and defendant appeals from the decree. Sam... Smith and the Buckeye Incubator Company also ...from that portion of the decree which held that the ...t did not infringe claim No. 2 of the patent. The ...ent has been so frequently before the courts and ...described in the numerous opinions filed that we ...ll our description so far as possible.

...ion of the appellees is that the Smith patent and ... completely revolutionized the art of hatching ...bators. In support of that contention they ... that since the patent was issued more than ..., ...ds of incubators manufactured thereunder have ... with a total capacity of over 150,000,000 eggs.

The art of hatching eggs by incubators is old. The claim advanced is that under all the old methods a relatively small number of eggs could be placed in the incubator at one time; that by the method described in the Smith patent it is possible to increase the number of eggs in the incubator at one time, almost indefinitely, incubators manufactured under the patent having a capacity of from 25,000 [fol. 183] to 50,000 eggs being in common use. The claims of the invention which are involved in this action are Nos. 1 and 2, as follows:

"1. The method of hatching a plurality of eggs by arranging them at different levels in a closed chamber having restricted openings of sufficient capacity for the escape of foul air without undue loss of moisture and applying a current of heated air, said current being created by means other than variations of temperature and of sufficient velocity to circulate, diffuse and maintain the air throughout the chamber at substantially the same temperature, whereby the air will be vitalized, the moisture conserved and the units of heat will be carried from the eggs in the more advanced stage of incubation to those in a less advanced stage for the purpose specified.

"2. The method of hatching a plurality of eggs by arranging them at different levels in a closed chamber having restricted openings of sufficient capacity for the escape of foul air without undue loss of moisture and applying a power driven current of heated air in an adjacent chamber through openings into the egg chamber, said current being of sufficient velocity to circulate, diffuse and maintain the air throughout the egg chamber at substantially the same temperature, whereby the air will be vitalized, the moisture conserved and the units of heat will be carried from the eggs in the more advanced stage of incubation to those in a less advanced stage for the purpose specified."

[fol. 184] In the incubation of eggs they begin to give off heat and to absorb oxygen and give off carbon dioxide about the fifth day. Up to that time it is necessary to supply artificial heat to start the process of incubation. Thereafter it is essential to supply the necessary oxygen and remove the carbon dioxide, and also to remove the heat developed by the egg itself. The removal of heat from

the eggs was ordinarily accomplished by reducing the temperature in the incubator so that a circulation of air was produced by the heated air arising from the egg being replaced by the colder air enclosed in the incubator, that is, by convection. The Smith method of incubation instead of relying upon the gentle currents of air thus produced contemplates a large volume of air in an enclosed chamber kept at a uniform temperature of from 100 to 105° circulated by means of fans with such great velocity that it prevents the building up of small quantities of superheated air in immediate contact with the eggs generating heat during the last stages of incubation. The same movement of air which removes the excess heat from the egg also removes the carbon dioxide in immediate contact with the shell of the egg and replaces it with air in the average condition of heat, moisture and purity in the incubator. The temperature of the air in the incubator is regulated by thermostatic control, additional heat being necessary to that supplied by the eggs in the latter stages of incubation. To get rid of the excess carbon dioxide given off by the hatching chicks, a small vent from the large incubator chamber is provided and from the vent a small amount of air is constantly escaping, being replaced by fresh air [fol. 185] drawn in by the ventilating fan and forced into the incubating chamber to mix with the large volume of air which is being constantly circulated by the fan. The recirculation of the air tends to conserve the moisture in the eggs and reduce the cost and simplify the method of heating. Apparently the key to the problem of incubation in mammoth incubators by what is known as staged incubation, lay in the ability to maintain a constant temperature in the incubating compartment. To do this it is necessary that the air currents in the incubator move with comparatively high velocity. This velocity in the Smith machine is obtained by a number of comparatively small electric fans. In the operation of the Smith machine the velocity of the column of air leaving the fan is about 1200 feet per minute. Its speed when it enters the region of the hatching trays is approximately 250 feet per minute, as through the hatching trays from 20 to 40 feet per minute, up through the tilting trays varies from 50 to 60 to as high as 150 feet per minute, and as the column of air returns to the fan where it crosses the beams at the top is

approximately 500 feet per minute. In the machines manufactured under the Smith patent the fresh eggs are placed at the top of the column and the eggs in the last stages of incubation are at the bottom, the eggs being lowered from day to day as the chicks are moved from the lower boxes.

The validity of this patent has been sustained in every decision heretofore rendered in which the patent has been involved. Three of the decisions were renderd by Circuit Courts of Appals. Buckeye Incubator Co. v. Wolf, 291 [fol. 186] Fed. 253, affirmed in Wolf v. Buckeye Incubator Co. (C. C. A. 6), 296 Fed. 680; Buckeye Incubator Co. v. Cooley (C. C. A. 3), 17 F. (2d) 453; Buckeye Incubator Co. v. Blum, 17 F. (2d) 456, affirmed (C. C. A. 6), 27 F. (2d) 333; Buckeye Incubator Co. v. Petersime (C. C. A. 6), 19 F. (2d) 721; Buckeye Incubator Co. v. Hillpot, 22 F. (2d) 855, affirmed (C. C. A. 3), 24 F. (2d) 341; Miller Hatcheries v. Buckeye Incubator Co. (C. C. A. 8), 41 F. (2d) 619. Notwithstanding these decisions the appellant contends that the patent is invalid on the ground that it was anticipated in the prior art and contends that some features of the prior art were not presented, or if presented were not considered in the decisions heretofore renderd sustaining the patent. In view of the decisions above referred to interpreting the Smith patent we deem it unnecessary to further discuss either the nature or character of the invention or to describe the method of incubation covered by the Smith patent or to attempt to define the limitations placed upon the patent by these decisions which in that regard are not entirely consistent.

One of the prior uses principally relied on by appellant is the Fullington prior use which is the only one relied on which has not been before the courts in prior cases involving the validity of the Smith patent. This device consisted of a small incubator of the still air type adopted to hold approximately one hundred eggs in a single tray and at single setting to which Fullington attached a fan operated by dry cell batteries. The temperature in the incubator was controlled by a thermostat connected to the fan and when the temperature rose above a certain point the ther- [fol. 187] mostat caused the fan to start up blowing fresh cool air into the incubator from the outside and discharging an equivalent amount of hot foul air out of the incubator through vents placed in the incubator for that purpose.

the temperature was reduced to the proper degree the thermostat acted to stop the fan. In the Fullington device there was no definite continuous current of air circulating as has been held to be essential in the Smith patent, but the fan operated only intermittently when the air in the incubator became too hot. Nor was the idea of staged incubation incorporated in the Fullington use as Fullington testified that all the eggs were set at the same time on a single tray and not with spaced tiers or layers of eggs one above the other in different stages of incubation. This fan attachment was used for only three settings when its use was abandoned and the incubator was thereafter used without it. The sole purpose sought to be obtained by the Fullington device was to keep the eggs from overheating and the Fullington prior use falls far short of anticipating the Smith patent which utilizes the heat generated by the eggs in the last stages of incubation to heat the eggs in the earlier stages, and conversely, the lower temperature of the latter eggs to reduce the temperature of the eggs in the other stages. The other prior use principally relied upon by the appellant to defeat the Smith patent is that by Lawry. Lawry did provide for a large chamber of heated air in which the eggs were placed. He did provide small vents above and below this chamber through which the air entered and escaped from the incubating chamber. The [Vol. 188] air in the Lawry process was given some momentum by an electric fan but the effect of this momentum was almost entirely dissipated by the fact that the current of air was forced through a large number of small openings and escaped through similar openings to return through narrow passages to the fan to be again circulated through the incubation chamber. The obvious purpose of Lawry in this method of incubation was to supply fresh air without agitating the contents of the incubating chamber any more than was necessary to supply the fresh air. Apparently there was no effort to remove the heat from the incubating eggs by a current of high velocity. The plan was obscure and was abandoned and need not be further considered. We conclude that the Smith patent is valid.

The next question is whether it is infringed by the incubator used by the appellant Waxham purporting to be covered under the Robbins patent. Claims 1 and 2 of the Robbins patent are as follows:

"1. An incubator comprising an elongated compartment whose front side is formed by doors that may be opened and closed, an egg tray rack located within the compartment, said rack being supported by a shaft extending lengthwise of the compartment and located closer to the front than to the rear wall, the rack being provided with transversely extending slides for supporting egg trays, egg trays carried on said slides, a fan located between the rear of the egg tray rack and the rear wall of the compartment and rotatable about a horizontal axis perpendicular to the [fol. 189] rear wall, and means for rotating the fan so as to produce an air current that travels from the fan towards the doors directly in front of the fan whereby the air will return towards the fan along the outside of the central air current.

"2. An incubator comprising an elongated compartment whose front side is provided with doors that may be opened and closed, an egg tray rack located within the compartment, said rack being provided with transversely extending slides for supporting egg trays, egg trays carrier on the slides, a fan located between the egg tray rack and the rear wall of the compartment and rotatable about a horizontal axis substantially perpendicular to the rear wall whereby when the fan is rotated it will produce an air current that travels through the egg tray rack between the super-positioned egg trays, and means for turning the eggs."

This patent contemplated the rotation of a large fan in the incubating chamber, thus generating air currents. The patent states that the currents travel directly forward from the fan toward the door and return along the walls of the chamber "along the outside of the central air current," that is to say, the patent contemplates currents of air generated by the fan moving from the fan through the eggs in the chamber and returning to the fan. This is exactly what is done by the method outlined in the Smith patent. The differences, however, are two: In the Smith patent the air [fol. 190] moves in vertical columns passing downward from the fan and returning upward thereto. The two columns, that is, the down column and the up column, are separated by a curtain. The upward current is caused by the downward current striking the bottom of the incubator and

shrooming under the curtain and drawn upward by the tion of the fan and by the pressure of the downward mn of air. Accoording to the Robbins patent the same ing is accomplished without the curtain and the current olves in a horizontal instead of a vertical plane. Obusly these differences are of no significance. They are re substitutes for the plan in the Smith patent. If an provement results from the elimination of the curtain is nevertheless an infringement of the Smith patent. he machine operated by the appellant Waxham, however, es not operate in accordance with the claims of the Robins patent. In fact, according to the findings of the master, the air currents move in exactly the opposite direction rom that described in the patent; that is to say, the air is forced from the periphery of the large fan operating in the nclosed space to the walls of the incubating chamber and follows the side walls to the front doors where, striking hose doors, it is deflected inward and then drawn to the nter of the fans by the suction resulting from the outward movement of the air along the blades of the fan to heir periphery. In actual operation the fan is large and moves with high velocity so that the current of air leaving he periphery of the fan and going outwardly along the alls of the chamber is moving about 900 feet per minute, s speed when it strikes the front wall of the chamber and [fol. 191] turns inwardly is about 250 feet per minute, and s it passes through and around the trays on returning to he fan its speed varies from 40 to 350 feet per minute, increasing as it nears the vortex of the fan to as high as 600 eet per minute. There is a definite and continues current f air utilized in the Waxham device moving at a velocity ot materially different from the speed of the air current n the Smith patent and accomplishing substantially the ame purpose.

The appellant seeks to avoid the claim of infringement y reason of the fact that the eggs in his machine are not laced in a single column with the fresh eggs at the top nd eggs which are hatching at the bottom, but are distributed through the chamber without any endeavor to place hem in any exact relationship. This difference is clearly immaterial where the air in a chamber is kept at a constant nd uniform temperature and rapidly circulated. The result of currents of air moving with high velocity would

be to transfer heat from the older eggs to the fresher and colder eggs in either event. The important thing is the high velocity of the air current, avoiding stagnation in the immediate vicinity of the eggs in later stages of incubation.

The appellant relies upon the decision of the Circuit Court of Appeals in the Petersime case where it was held that a device which merely agitated the air in the incubating chamber did not infringe the Smith patent. We are not concerned with such a device in this case. We have indicated in another case recently filed that the findings of the master on the question of infringement, approved by [fol. 192] the trial court, should be given great weight. Stoody Co. v. Mills Alloys, 67 F. (2d) 807. In this case we are satisfied that the decision of the master is correct for the reasons we have stated, and for others which are more elaborately stated by the master and which we need not repeat.

With reference to the cross appeal of the plaintiffs we do not see how it can be seriously contended that the second claim of the patent is infringed and there is no argument thereon in the briefs. Claim 2 of the Smith patent contemplates a power driven current of heated air originating in an adjacent chamber and passing through openings into the egg chamber and in the Waxham device there is no adjacent chamber and the air currents are entirely within the enclosed chamber.

Decree affirmed.

(Endorsed): Opinion. Filed Apr. 9, 1934. Paul F. O'Brien, Clerk.

[193] PLAINTIFF'S EXHIBIT No. 20

IN THE UNITED STATES DISTRICT COURT, DISTRICT OF CONNECTICUT

In Equity. No. 2369

SAMUEL B. SMITH, Plaintiff,

vs.

A. B. HALL and L. C. HALL, d. b. a. HALL BROTHERS, Defendants

AFFIDAVIT OF JOSEPH I. TAGGART

STATE OF OHIO,
County of Cuyahoga, ss:

I am the same Joseph I. Taggart who made the former affidavit in this case. I have read the Brief filed in Behalf of Defendants herein, and the other papers referred to therein. I was present at the hearing before Judge McCormick in the Southern District of California in the Martin and Fontana Farms cases, and am familiar with the subsequent proceedings in such cases.

In the Waxham case pending before the Supreme Court on Petition for Rehearing, that Court, upon motion of the respondent (plaintiff here) on the 4th day of February, ordered that the Mandate go down at once, and the Mandate was forwarded to the District Court on the 5th inst. Furthermore, the petitions for rehearing in the Snow and [194] Waxham cases were denied February 18th, 1935. The total present capacity of defendants' several incubators is approximately 725,000 eggs. From the date of filing of the motion for preliminary injunction (January [illegible]) to the date of expiration of the patent in suit (April [illegible]), the defendants will hatch 140,000 chicks per week on an average, as shown by their advertisements on pages 22 and 23 of "New England Poultryman" of Jan. 15, 1935, a total of 1,960,000 chicks (Ex. 14).

In a former litigation, in which profits were awarded (Hatcheries v. Buckeye, 41 F. [2] 619), awards of approximately one-and-a-quarter cents (.0125) per chick were made by the Court for most inefficient operations and at low prices, while for more efficient operations

three cents (.03) a chick were awarded. Both findings were affirmed and no appeal taken.

I am familiar with defendants' operations, and they are most efficient, and they receive the top prices for their chicks. It is my belief from these facts that defendants should average three cents a chick profit, if not more. Defendants' profit during the period will undoubtedly be $56,400.00 or more. The entire profit which the defendants have realized from six years prior to the filing of the Bill of Complaint to the date of expiration of the patent is difficult to estimate, but it should be in the neighborhood of $400,000.00 to $500,000.00. As the defendants operate one of the largest hatchery establishments in the country, this estimate is not unreasonable.

Referring to the action of Judge McCormick on the mo-
[fol. 195] tion for preliminary injunction in the Austin and Fontana Farms cases, the Judge was advised of the pendency of the petition for writ of certiorari in the Waxham case. This was allowed by the Supreme Court October 8, 1934, and the Judge did not deny the motions until October 10, 1934.

In the Austin Farms case the incubator in suit was identical with that involved in the Waxham case, i. e., no eighteen day question was involved. In the Fontana Farms case the eighteen day question was raised. Judge McCormick denied the motion for preliminary injunction in both cases.

The delay in the hearing of the appeal of these cases in Circuit Court of Appeals for the Ninth Circuit is, I am informed, due to the vacancies on that bench, caused by the recent deaths of two of the justices.

The important period of incubation is the first eighteen days, at the end of which period the embryo has developed into an active chick ready to pipe the shell and issue. If the embryos can successfully be brought to this stage of its development it has reached a point where careful treatment of the eggs is not necessary. It is not an uncommon expedient to remove the eggs from the hen's nest at this time, and hatch them in a reasonably warm environment, such as under the kitchen stove. The defendants, in the operation of the 26-I Incubators, utilize the Smith process during the critical period of development, and during the eighteen days that the 26-I incubators are being used by

defendants, the eggs from the eleventh to the eighteenth day are generating large quantities of heat which is trans-
[fol. 196] ferred to the cold, heat absorbing eggs from one to eleven days old, and the colder eggs reduce the temperature of the air. The eggs during the 15th to the 18th day are the most difficult to keep from attaining a temperature destructive of the embryo in its then delicate condition. (See Smith patent, p. 2, ls. 63-72.)

The heat generated by the eggs from the eighteenth to the twenty-first day is not essential to the Smith process, for it is quite practicable to remove the eggs from a Smith incubator and transfer them to a separate hatching chamber. The manufacturer of the Robbins Incubator advertises that separate hatchers, such as used by defendants, may be used with Smith and Buckeye Incubators, both of which are made under the patent. (See page 14, Robbins 1933 catalogue, photostat attached marked Ex. 15.) However, no useful purpose is secured by the use of a separate hatcher and, as the operation of a separate hatcher is less efficient, Smith does not recommend it for those reasons.

Robbins (who is conducting the defense of this case) claims that the #23 Incubators involved in the Waxham case, as well as the incubators used by the defendants here, are manufactured under Reissue patent No. 18,984 of October 31, 1933 (page 2 of defendants' brief). In this patent, copy of which is attached hereto, marked Ex. 16, the "hatching" compartment, at the left, is separated from the "incubating" compartment at the right by a solid partition. It is evident that either expedient is the full equivalent of the other and may be used interchangeably.

[fol. 197] The Buckeye Incubator Company, licensee of Smith, in order to cater to some requests for separate hatchers, makes such a hatcher in conjunction with an incubator which contains eggs only during eighteen days. It pays royalty on those incubators, notwithstanding the fact that no eggs from the 19th to the 21st days are therein, thus recognizing that the operation for the first to the eighteenth day comes within the patent in suit.

I have read the affidavit of John J. Mullein, an employee of Robbins, filed in the Fontana Farms case. Such trend toward separate hatchers, as has been evidenced, has been fostered and encouraged by Robbins, and others, who seek

to avoid the Smith patent, but the Smith process is retained in all incubators used with the hatchers. Competent hatcherymen throughout the country continue to use Smith, Buckeye and other machines which do not have the separate hatcher, and their results are equal to, if not better than, the results secured by the users of separate hatchers.

There is no recognized distinction between the terms "hatching" and "incubation" as used by those skilled in this art at the date of the Smith patent, nor is there any distinction today, either in common usage or in scientific treaties on the subject. The Smith patent is stated to be for an "Incubator". The Supreme Court used the term interchangeably in the decisions rendered January 7, 1935. On page 1 of Exhibit 2 that Court said:

*"the Smith patent * * * for an improved apparatus and method for the incubation of eggs."*

[fol. 198] and below:

"Only so much of the patent as related to *a method for incubation* is now involved."

and then:

"The period for hatching eggs of the domestic hen is twenty-one days."

Beginning at the bottom of page 3 of Exhibit 2 that Court defined claim 1, in suit here, in the following language:

"It will be observed that the claim, standing by itself, asserts the essential elements of the method of incubation to be: (a) the arrangement of the eggs at different levels in staged incubation in a closed chamber, having restricted openings of sufficient capacity for the escape of foul air without undue loss of moisture; (b) the application to the eggs of heated air in a current created by means other than variation of temperature; and (c), as marking the boundaries of the claim, the current of air is to be of sufficient velocity to circulate, diffuse and maintain the air throughout the chamber at substantially the same temperature whereby the air will be vitalized, moisture conserved, and

units of heat carried from the eggs in the more advanced stage to those in the less advanced."

The operations carried on by the defendants in the 26-I incubators respond to every element of the claim, and the [fol. 199] Supreme Court's definition of the scope of the claim.

The Master in the Waxham case, whose opinion was affirmed by the District Court, the Circuit Court of Appeals for the Ninth Circuit, and the Supreme Court said:

"To find infringement it is only necessary to find that eggs in more than one stage of incubation, arranged at more than one level in a closed chamber with restricted openings, are subjected to the air currents previously discussed and defined."

A copy of this opinion is attached marked Exhibit 17.

It is not true, as stated by Mullein (p. 43 Fontana Record), that any Courts have required that eggs in all stages of incubation be in the incubator, for, up to the date of the papers filed by the defendants, no Courts have definitely passed upon this question. Contrary to Mr. Mullein, however, the Master stated, as quoted above, that is was only necessary to find eggs "in more than one stage of incubation" to find infringement.

Judge McCormick seemed to be under the impression that because the eggs were taken out of the incubator on the 18th day, and cooled before being placed in the hatcher, that there was some difference over the operation of the No. 23 Incubator. If so, Judge McCormick was in error, for in the operation of the No. 23 Incubator, the eggs, at the 18th day, are taken out of the turning racks and retrayed outside of the incubator in the cooler environment of the [fol. 200] hatchery room, retrayed and replaced in the incubating compartment at the left. The eggs were, therefore, subjected to the same cooling action at the same time in their development in the No. 23 incubator, as in defendants' practise.

Temporary exposure to the air with consequent cooling of the eggs for a short period does not affect the chick within the egg adversely or beneficially. The mother hen leaves her nest at frequent intervals, and the eggs cool while she

is off the nest, but no harm is done or benefit gained thereby.

There has been no delay in prosecuting the Robbins Incubator by plaintiff since the trial of that case before the Master in the Southern District of California in March, 1930, shortly after the Robbins Incubator came upon the market. On the other hand, Robbins, who conducted that case, has exerted every effort to delay and postpone the final decision in that case.

Joseph I. Taggart.

Sworn to and subscribed before me this 20th day of February, 1935. (Signed) Walter C. Kelsey, Notary Public. Com'n Expires Mar. 15, 1937. (Seal.)

# Hall's Chicks

Leghorns - Reds - Rocks - Wyandottes
New Hampshire Reds - Hallcross (Crossbred) Chicks

Chicks produced from flocks tested for Pullorum Disease (B.W.D.) by the Official State Testing Agency of one of the six New England States, with
NO REACTORS FOUND
Tube Agglutination tested, within the preceding calendar year

"WELL BRED FROM WELL BREEDERS"

WALTER C. KELSEY

**A GRAPH IS A SET OF FIGURES REPRESENTED PICTORIALLY**

The opposite page is a Graph of our 32 weekly hatches during 1934, showing a comparison week by week with the average of the respective hatches of 1932 and 1933.

## THAT GRAPH

...s a large business during the past ... a sizeable increase from the average ... two previous years; new high hatching records, owing to our having added ... capacity last Fall; and a quite even hatching of our entire capacity ... the last few weeks of the year.

Perhaps the strangest feature of the graph does not show at all. It is this: we have good reason to believe that no other hatchery in the world sold as many chicks as did Hall Brothers, during 1934; but how could this be possible, recognizing the high quality of Hall's Chicks?

...t remarkable for a Quality product to outsell those of less quality and price. ...n't have happened except for several circumstances, which couldn't be duplicated anywhere else, perhaps. Among these are:

1. Our fixed policy and determination to sell only chicks of such high quality that we feel sure of their profitableness to our customers.
2. Our record of over 20 years selling this sort of chicks, and this sort only.
3. The fact that every egg we set has been laid on a New England farm, by birds kept by some of the best poultry breeders of this up-to-date poultry section of the country.
4. The fine cooperative work which the New England Agricultural Experiment Stations have done in uniform testing and eradication of Pullorum. In no other part of the country could we find so many officially-Pullorum-Free flocks.
5. And, most important of all, the fact that here in New England and the Hallcross, poultrymen have found out that it is the Quality chick which pays.

In the West, where poultry is kept as ... on the farm, they are not pushed ... lots of they are here in the East. ... farmer keeps chickens as ... and sometimes thinks he can ... some by buying a cheap chick.

Here poultry is the main, often the only crop a poultryman raises. He studies his chicken business because it is his sole business and MUST PAY, and the Eastern poultryman knows that he MUST have a Quality chick to make money.

HALL'S CHICKS ARE PROFITABLE CHICKS

HALL BROS.
PROPRIETORS
BOX 68 WALLINGFORD, CONN.

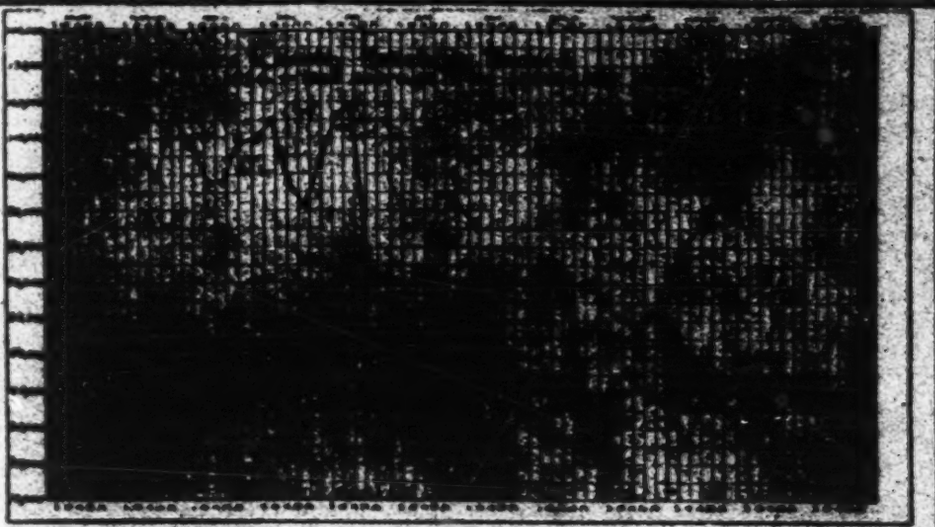


Hall's Chicks

Leghorns - Reds - Rocks - Wyandottes
New Hampshire Reds - Hallcross (Crossbred) Chicks

All chicks produced from flocks tested for Pullorum Disease (B.W.D.) by the Official State Testing Agency of one of the six New England States, with
NO REACTORS FOUND
Tube Agglutination tested, within the preceding calendar year

"WELL BRED FROM WELL BREEDERS"



| | Per Hundred | DISCOUNTS |
|---|---|---|
| RHODE ISLAND REDS<br>NEW HAMPSHIRE REDS<br>WHITE LEGHORNS<br>WHITE HALLCROSS | 14.00 | |
| BARRED ROCKS<br>BARRED HALLCROSS | 15.00 | |
| WHITE ROCKS<br>WHITE WYANDOTTES | 16.00 | |
| HALLCROSS BABY COCKERELS (Guaranteed 91% Cockerels) | 16.00 | ALL CHICKS SHIPPED ARE 100% LIVE DELIVERY GUARANTEED. |
| HALLCROSS BABY PULLETS (Guaranteed 91% Pullets) | 20.00 | |
| EXTRA PREMIUM CHICKS | 2c. additional per chick. | |

We Ship Prepaid and guarantee safe delivery

HALL BROS.
PROPRIETORS
BOX 68 WALLINGFORD, CONN.

Walter C. Kelley

[illegible]

[illegible] C. Kaplan, of Inglewood, Calif., one of America's foremost breeders of White Leghorns, wrote this summer:

[illegible]

## Special Robbins Hatcher for Use with Smith, Buckeye and Other Incubators

[illegible]

## In a Robbins Temperature Is Accurate to a Fraction of a Degree, in All Parts of the Incubator

[illegible]

## Patented Humidifier-Coolers Dependably Supply Both Moisture and Cooling

[illegible]

Reissued Oct. 31, 1933

Re. 18,[illegible]

# UNITED STATES PATENT OFFICE

18,[illegible]

## INCUBATOR

John L. Robbins, Edgewater, Colo.

Original No. 1,7[illegible], dated September 24, 1929, Serial No. [illegible], February [illegible], 1928. Application for reissue September [illegible], 1931. Serial No. [illegible]

4 Claims. (Cl. 119—37)

This invention relates to improvements in incubators, and has reference more particularly to an improved incubator of the type described and claimed in my Patent No. 1,732,[illegible], dated October 22, 1929.

In my present application the ventilating fans have been located at the rear of the incubator so as to blow the air transversely instead of longitudinally. It has been found that by this means a very satisfactory circulation of air is obtained and it is also possible to repair and replace the propellers without disturbing the eggs while when the propellers are located at the ends of the hatching trays, they are inaccessible and therefore very difficult to take care of.

In the drawing:

Fig. 1 is a horizontal section taken on line 1—1, Fig. 2;

Fig. 2 is a section taken on line 2—2, Fig. 1;

Fig. 3 is a front elevation looking in the direction of arrows 3 in Fig. 4;

Fig. 4 is a section taken on line 4—4, Fig. 3; and

Fig. 5 is a section taken on line 5—5, Fig. 3.

My improved incubator comprises a floor 1, a top 2, end members 3, a rear wall 4 and a front comprising doors 5, 6 and 7. The floor 1 is separated from the supporting surface 8 by means of transverse timbers 9. A partition 10 separates the interior of the incubator into two compartments, A and B. Compartment A contains the incubating trays and compartment B contains the hatching trays. For the purpose of supporting the incubating trays in such a manner that they can be tilted, I have provided a shaft 11, one end of which is journalled in the end 3, and the other of which is journalled in a transverse member 12 attached to the partition 10. The trays 13 are suitably supported between frames 14 of which four have been shown. These supporting frames are provided with cleats 15 that extend trans-

Strips 20 are secured to the rear edges of the frame members 14 and serve as stops which prevent the trays from being pushed rearwardly. For the purpose of holding the trays against forward movement, I have secured to the front vertical members of the frames 14 a bar 22 which is provided with a plurality of longitudinal slots 23 through which the screws 24 extend. These screws are provided with wing nuts 25 and serve to clamp the bars 22 in adjusted position. These bars are provided with lateral lugs 26 that extend over the forward ends of the trays when bar 22 is in the full line position shown in Fig. 3, but which occupy the dotted line position when the bar is moved upwardly. When these lugs are in the dotted line position, the trays can be pulled forward so as to be easily removed and inserted. The operation of this latching means has been quite clearly illustrated in Figs. 3, 4 and 5. Located within the incubator are electric heaters 27 by means of which the interior of the incubator is maintained at the desired temperature. As these heaters are quite universally employed and have merely been shown so as to better explain the invention, the circuit connections and manner of controlling their operation will not be described herein. Located above the heaters is a water pan 28 which serves to maintain the air within the incubator at the proper degree of humidity.

For the purpose of circulating the air within the incubator, I have provided each of the compartments with a fan. Compartment A is provided with a large fan having four blades 29 that are secured to a hub 30. This hub has a shaft 31 that extends to the rear of the incubator and is rotatable in bearing 32. A pulley 33 is secured to the outer end of the shaft and this is connected by means of belt 34 to a motor 35. A similar fan is rotatably mounted in the rear of compartment B and the various parts [illegible]

John L. Robbins.

John L. Robbins, Plaintiff, Ohio

Original No. [illegible]

[illegible]

Application for reissue [illegible]

Serial No. [illegible]

4 Claims. (Cl. [illegible])

This invention relates to improvements in incubators, and has reference more particularly to an improved incubator of the type described and claimed in my Patent No. 1,712,[illegible], dated October 22, 1929.

In my present application the ventilating fans have been located at the rear of the incubator so as to blow the air transversely instead of longitudinally. It has been found that by this means a very satisfactory circulation of air is obtained and it is also possible to repair and replace the propellers without disturbing the eggs while when the propellers are located at the ends of the hatching trays, they are inaccessible and therefore very difficult to take care of.

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Attention is called at this point to the means employed for holding the trays in position.

[illegible]

[illegible]

[illegible]

[illegible]

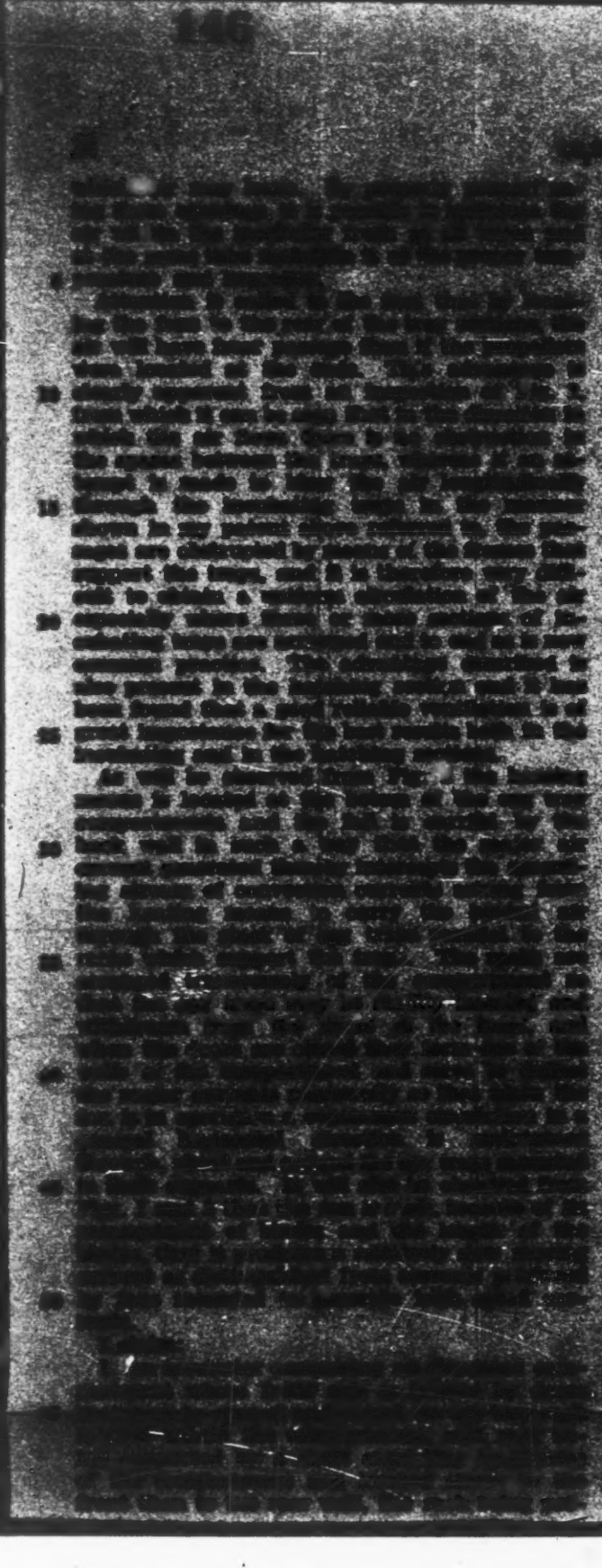
[illegible] with transversely extending slides for supporting egg trays, egg trays carried on said slides, [illegible] between the rear of the egg tray rack and the rear wall of the compartment and [illegible] about a horizontal axis perpendicular to the rear wall, and means for rotating the fan so as to produce an air current to circulate the trays.

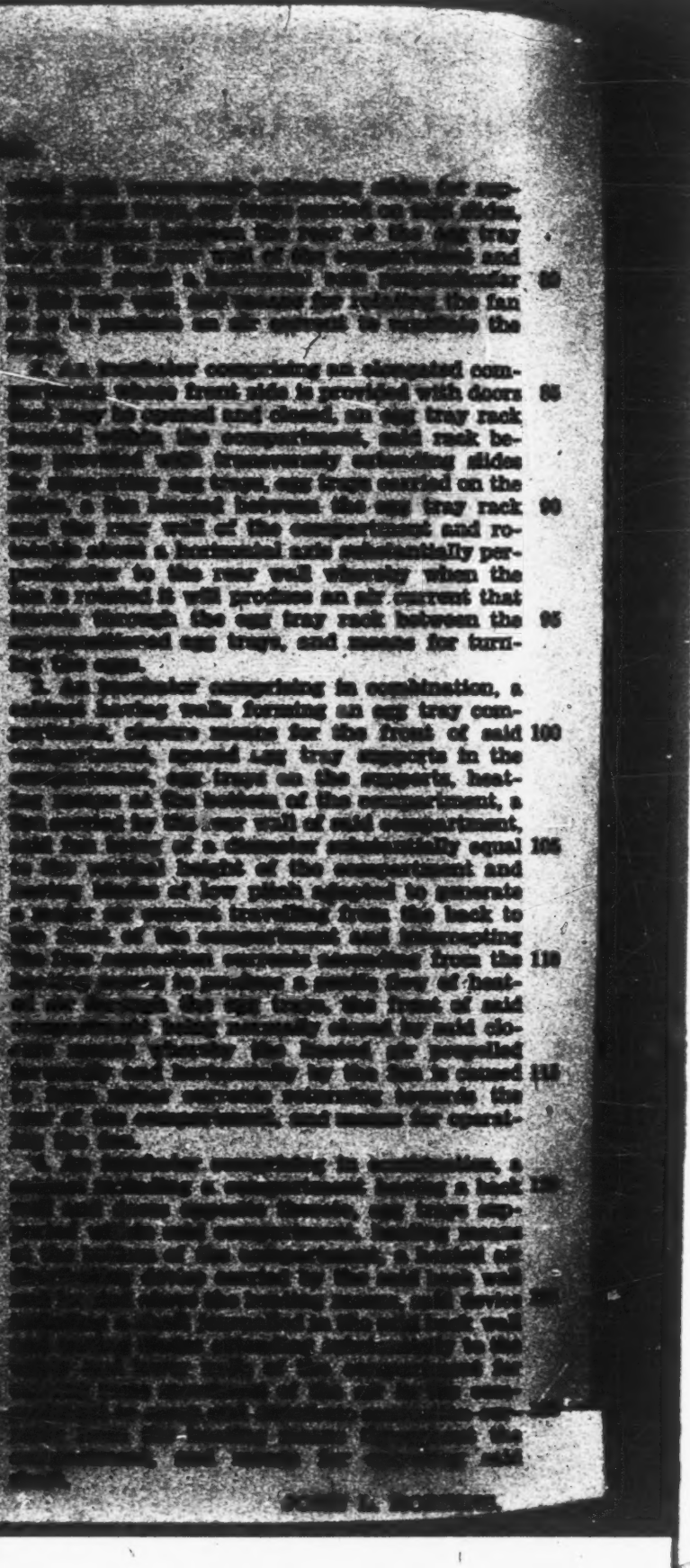
2. An incubator comprising an elongated compartment whose front side is provided with doors that may be opened and closed, an egg tray rack located within the compartment, said rack being provided with transversely extending slides for supporting egg trays, egg trays carried on the slides, a fan located between the egg tray rack and the rear wall of the compartment and rotatable about a horizontal axis substantially perpendicular to the rear wall whereby when the fan is rotated it will produce an air current that travels through the egg tray rack between the superpositioned egg trays, and means for turning the eggs.

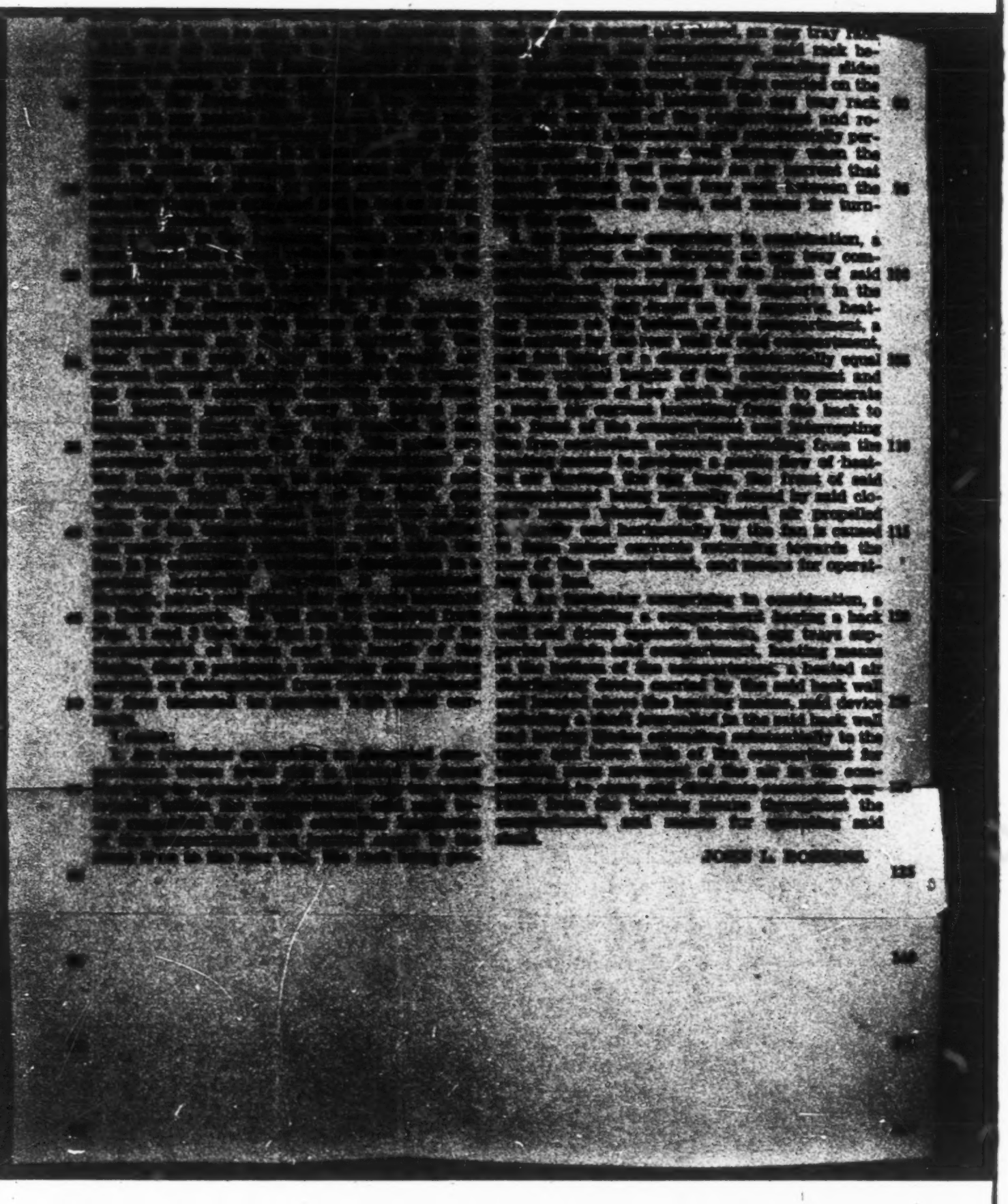
3. An incubator comprising in combination, a cabinet having walls forming an egg tray compartment, closure means for the front of said compartment, spaced egg tray supports in the compartment, egg trays on the supports, heating means at the bottom of the compartment, a fan carried by the rear wall of said compartment, said fan being of a diameter substantially equal to the vertical height of the compartment and having blades of low pitch adapted to generate a major air current travelling from the back to the front of the compartment and intercepting the free convection currents ascending from the heating means to produce a gentle flow of heated air through the egg trays, the front of said compartment being normally closed by said closing means whereby the heated air propelled forwardly and horizontally by the fan is caused to form minor currents returning towards the rear of the compartment, and means for operating the fan.

4. An incubator comprising in combination, a cabinet defining a compartment having a back wall and front opening therein, egg trays supported within said compartment, heating means at the bottom of the compartment, a heated air distribution chamber carried by the said back wall and having the heating means, and device [illegible] a shaft journaled in the said back wall [illegible] the compartment, and means for operating said shaft.

JOHN L. [illegible]







[fol. 206] EXHIBIT 17—WALTER C. KELSEY

IN THE DISTRICT COURT OF THE UNITED STATES FOR THE SOUTHERN DISTRICT OF CALIFORNIA, CENTRAL DIVISION

In Equity. No. Q-69-M

SAMUEL B. SMITH and THE BUCKEYE INCUBATOR COMPANY, Plaintiffs,

vs.

HERBERT H. WAXHAM, Doing Business as WAXHAM HATCHERIES, Defendant

REPORT OF SPECIAL MASTER

To the Honorable Judges of the United States District Court for the Southern District of California, Central Division:

The undersigned, David B. Head, appointed Special Master in the above entitled cause, pursuant to an order of this Court to take and hear evidence, to make conclusions as to the facts in issue, and recommend the judgment to be entered thereon, herewith submits his report:

The Action is in equity for infringement of Letters Patent No. 1,262,860, issued to the plaintiff, Samuel B. Smith, on April 16, 1918, for an incubator. The Buckeye Incu- [fol. 207] bator Company has been joined as a party plaintiff by reason of a license under the patent. The nominal defendant is Herbert Waxham. J. L. Robbins, who has been doing business as the Robbins Incubator Company, of Edgewater, Colorado, the manufacturer of the structure alleged to infringe, appeared and defended the action.

Pursuant to the order of reference, the master set the matter down for the taking of testimony for March 25, 1930, at which time there appeared for the plaintiffs, Albert L. [illegible], Esq., of Akron, Ohio, and Leonard Lyon, Esq., of Los Angeles, California; and for the defendant, A. J. O'Brien, Esq., Fred. Farrar, Esq., of Denver, Colorado, and W. R. [illegible]berg, Esq., of Los Angeles, California. Testimony was taken from day to day and on March 31, 1930, both parties rested. By stipulation the arguments of counsel

were made by the filing of briefs, and the matter was taken under submission. During the taking of testimony an inspection was made of an installation of the plaintiff's incubators at Van Nuys and Roscoe, California, and of a Robbins incubator near Gardena, California.

The plaintiffs have specified infringement of Claims 1 and 2 of the patent. The defendant has asserted the invalidity of the patent but relies mainly upon the defense of non-infringement, particularly urging a narrow construction of the claims in suit. These claims are directed to a process or method of artificially hatching eggs.

The Smith Patent No. 1,262,860 was issued with specifications and claims for both a structure and a method. It [fol. 208] is impossible arbitrarily to divorce and abstractly to consider a method or process apart from the structures used to carry it out. The structure of the patent in suit will first be considered, although the claims in issue are directed solely to the process.

The Art that is dealt with is that of artificially incubating and hatching the eggs of chickens and other fowls. Artificial incubation and hatching are very old and represent man's endeavor to imitate and even improve upon the biological function of the hen in the later stages of reproducing her kind. Chicken eggs ordinarily require twenty-one days for the process of incubation and hatching. The eggs should be kept at a temperature of not less than 100° and not more than 105° Fahrenheit. In the early stages of incubation the embryo begins using the white of the egg as food. The chemical reactions involved require oxygen and result in the giving off of carbon dioxide. As the use of oxygen increases the heat produced by the reaction also increases. Plaintiffs' Exhibit 4 shows that there is a gradual increase until the eighteenth day. Around the eighteenth day the embryo begins to consume the yolk of the egg, which results in a marked increase in the chemical reaction referred to, accompanied by a corresponding increase in the heat produced. It is to be noted that during the first eighteen days it is necessary frequently to move the position of the egg on its axis to the extent of about ninety degrees. From the eighteenth to the twenty-first day this is not necessary.

From the physical fact it is evident that the problems [fol. 209] involved in incubating and hatching eggs are:

(1) To provide means to raise the temperature of eggs in the earlier stages of incubation, and to provide means for reducing the temperature of eggs in the later stages of incubation, to the end that the eggs are kept at a temperature of not less than 100° or over 105°.

(2) To provide means for supplying oxygen to the eggs and for removing carbon dioxide from the air about them.

(3) To provide means for turning the eggs during the first eighteen days of incubation.

(4) To provide means for preventing too rapid evaporation of the moisture content of the egg, so that the embryo will not dry out too rapidly.

Without considering the prior patents in evidence and looking to the common usages of the art prior to the disclosure of the patent in suit (testimony of Taggart) it appears that artificial incubation was an old art. The problems heretofore outlined had been solved by providing closed chambers with means for artificial heating, wherein the eggs could be placed all on the same level and kept at a uniform temperature until hatched. Means were provided for turning the eggs. Due to the difficulties of temperature control that would have been encountered with larger quantities, not over five hundred eggs were placed in each en- [fol. 210] closure or cabinet. The air surrounding the eggs was kept as still as possible, giving consideration to ventilation to remove air fouled with carbon dioxide and admit air carrying oxygen. The incubators of this period worked satisfactorily. However, it was apparent that economies would result from incubators in large units, wherein a large number of eggs could be hatched, with not a great deal more care and expense than in the smaller unit. As will appear in the consideration of the patented prior art, the idea of staged incubation was not new but its practical application had not been accomplished. Staged incubation may be defined as a process of incubation wherein eggs of different stages of incubation are placed in the same inclosure, and as eggs in the later stages are hatched, new eggs are put in, and this sequence is continued progressively and indefinitely.

Directing his endeavors to the perfection of staged incubation, the patentee, one of the plaintiffs herein, developed and disclosed the structure and method of the patent.

Referring to the patent, the structure there disclosed is in the form of a large chamber in which eggs are arranged in series or tiers of trays. A central compartment or corridor, 5, extends longitudinally through the chamber with a door at one end. On both sides of the corridor are the compartments 7 and 8. In these compartments are placed a large number of trays in which the eggs to be hatched are placed. Means are provided for tilting some of the trays from one side to the other. The compartments are divided from the corridor by curtains, 3 and 4, which extend [fol. 211] almost to the floor. Electric fans, 18, are provided to force air downward to the floor of the corridor, 5, where it "mushrooms" and passes upward in the compartments, 7 and 8, through or around the trays to the space, 21, from which space it is again drawn into the fans and started on another cycle. Restricted openings, 28, permit a small amount of air to escape during circulation, which is replaced by air drawn in through openings over the fans. The limited interchange of air between the interior and exterior of the incubator together with the means provided for introducing moisture into the incubator serves to retain within the enclosure the greater percentage of the moisture given off by the eggs. This prevents the eggs from drying out too rapidly.

In operation trays of eggs are placed first in the upper stationary racks. As incubation progresses they are moved to lower tiltable racks and progressively downward until the eighteenth day, at which time they are placed in the stationary hatching racks at the bottom. As eggs are moved downward fresh eggs are placed in the top until the incubator is filled. Thereafter the process continues by the removal of the hatched chicks from the bottom, the moving of eggs downward and the placing of eggs in the top while in the central trays the eggs are moved through an arc of ninety degrees each day. The tilting of eggs is an old practice and we are not concerned with it in this case. It should be noted that the racks are shown tilted at less than 45°, but it appears in actual practice the trays are tilted to that angle. As the air circulates, ventilation occurs through the openings previously referred to. The amount of air [fol. 212] changed upon a single cycle is quite small as compared with the total volume of air, and is regulated to provide a volume of oxygen sufficient to satisfy the chemistry

of incubation. The pipes, 23, are heated by steam or hot water, and they heat the air as it passes over them on returning to the fan. Moisture jets, 26, spray water into the circulating air to maintain the proper degree of humidity within the chamber. Both heat and moisture are capable of regulation.

This structure has been placed on the market by both the patentee and the other plaintiff and has gone into widespread use. Plaintiff's Exhibit 15 shows the total gross business to have been in excess of $19,000,000.00.

The plaintiffs' commercial machine does not vary greatly from the patent except that all racks other than the lower hatching racks are tiltable, that the curtains do not extend below the bottoms of the lowest tilting racks, and that four fans are used instead of two. One of these machines was in evidence, plaintiffs' exhibit 14. It has a capacity of 52,000 eggs. The master observed certain experiments with this machine and also with machines of the same type at the Hewitt Hatchery in Van Nuys. These experiments were concerned with the measurement of the direction and velocity of the air currents while the fans were in operation. Generally these experiments confirmed the showing of Plaintiff's Exhibit 5. This shows that the air circulates in definite cycles, leaving the fans with a speed of around 1,200 linear feet per minute and passing through the egg compartments at from 120 to 40 feet per minute. The fans [fol. 213] have a total capacity of 6,000 feet per minute. The purpose of circulating the air in definite currents is to obtain a uniform temperature throughout the whole body of eggs. As pointed out before, eggs in the earlier stages of incubation must be furnished with heat and those in the later stages must be cooled by removing units of heat from them. The air circulating at considerable velocity accomplishes this by removing heat from the old eggs and transferring it to the new eggs. The patentee states:

"It, therefore, appears that the improved apparatus and method contemplates the application of hot air circulating in a column with such speed as to keep the temperature substantially uniform and so arranging the eggs that the fresh eggs are placed at one point in the column of air and held in a horizontal plane until they reach a predetermined stage of incubation and then put at a different point in the

same column of air and kept in planes inclined to the horizontal and thereafter placed at such a point in the column of air that the forced draft of air acts to hold the eggs at a uniform temperature and to prevent them from becoming overheated and thereafter placing the eggs into final position for the hatching operation."

Claims 1, 2, and 3 are directed to the method described, while Claims 4 and 5 are directed to the structure.

Claims 1 and 2 are in issue and read as follows:

[fol. 214] "1. The method of hatching a plurality of eggs by arranging them at different levels in a closed chamber having restricted openings of sufficient capacity for the escape of foul air without undue loss of moisture and applying a current of heated air, said current being created by means other than variations of temperature and of sufficient velocity to circulate, diffuse, and maintain the air throughout the chamber at substantially the same temperature, whereby the air will be vitalized, the moisture conserved and the units of heat will be carried from the eggs in the more advanced stage of incubation to those in a less advanced stage for the purpose specified.

"2. The method of hatching a plurality of eggs by arranging them at different levels in a closed chamber having restricted openings of sufficient capacity for the escape of foul air without undue loss of moisture and applying a power driven current of heated air in an adjacent chamber through openings into the egg chamber, said current being of sufficient velocity to circulate, diffuse, and maintain the air throughout the egg chamber at substantially the same temperature, whereby the air will be vitalized, the moisture conserved and the units of heat will be carried from the eggs in the more advanced stage of incubation to those in a less advanced stage for the purpose specified."

"The Prior Art in evidence consists of a large number of United States and foreign patents. The patent in suit [fol. 215] has been held valid in a number of cases. As defendant's counsel points out, the validity of the patent has not been adjudicated in this district or circuit. However, there is no question but that the patent is valid, although its scope has never received complete definition.

The prior patented art may be divided into two groups: (1) incubators and (2) ventilating devices. Those in the second group have been offered as being in an analogous art. The principal reference in this group is Proctor, U. S. Patent No. 553,723, defendant's Exhibit A-15. This patent, which calls for the forced circulation of air in a closed chamber for the ordering of tobacco, appeared in 1896, and until the disclosure of the patent in suit the practice of the incubator art was to keep the air as still as possible inside the chamber where the eggs were placed. This, in itself, negatives any theory of anology between the arts. In ordering tobacco, the tobacco is placed in a chamber and air is circulated to bring the tobacco to a proper moisture content. In the Smith incubator eggs in various stages of incubation, having different heat and moisture requirements, must be kept at the proper temperature, in the proper air, with a certain moisture content. There is no analogy.

Among the patents for incubators, the German patent to Stulik (1904) defendant's Exhibit A-36, is the most pertinent. This patent discloses an incubator with a chamber in which eggs are placed in different stages of incubation. Air is drawn in from the bottom and passes by convection from new eggs to old eggs and thence out through openings in the top. Here is found staged incubation but with-[fol. 216] out a forced circulation of air, or the recirculation of air. The patent claims include only one element found in Stulik, i. e., the arrangement of eggs in different stages of incubation in a closed chamber. Stulik is not an anticipation and this reference only goes to show that it did not occur to this worker in the art to apply a forced circulation of air to eggs in different stages of incubation.

The same may be said of Zimmer, defendant's Exhibit A-29 and of the ingenious machine of Winkler, Exhibit A-6. Although all of these patents are old they do not appear to have been adopted by the art.

From a consideration of the patent and the prior art references, it is concluded that the novelty disclosed in the patent in suit is in the circulation of air by forced draft throughout a closed chamber in which eggs in different stages of incubation are placed. The idea of putting the eggs in different stages of incubation in the same chamber was old (Stulik) as was the provision for proper ventila-

tion which is common to all incubators. In the patent in suit we find a radical departure from the common practice, i. e., Smith uses a forced circulation of air where in the prior art the air was kept as still as possible, going no farther than the convection currents of Stulik.

Upon the scope of the claims defendant has argued that the file wrapper and contents of the Smith application impose specific limitations. The contention is that this limitation goes to the extent of limiting Smith to an arrangement whereby the currents of air coming from the fan must first be passed over the eggs in the last stages of incuba- [fol. 217] tion and thence over the other eggs, so that the progression is such that the newest eggs are the last to be reached by the circulating air. This must be upon a theory that the transference of heat from old to new eggs must be accomplished in one cycle. This limitation is not expressed in either of the claims, in that the claims go no further than to say that the eggs must be arranged "at different levels" and the air impelled with sufficient velocity "to circulate, diffuse and maintain the air throughout the chamber at substantially the same temperature," whereby "the units of heat will be carried from the eggs in the more advanced stages of incubation to those in a less advanced stage."

In examining the file wrapper it is found that the Smith application passed through the usual interchange of ideas and comments between the examiner and solicitor. Claims were offered and rejected. By the paper "E," the claims in suit were added and allowed without comment from the examiner. Although arguments were offered prior to that time which pointed out the specific arrangement of old and new eggs in the Smith structure and this point was before the examiner, no limitation to this specific arrangement was required as to claims 1 and 2. Having this in mind and having previously taken note of the patented prior art, if the examiner had felt that some limitation should have been imposed he surely would have answered the amendment "E." From this it is logical to assume that the examiner had reached by that time a full understanding of the disclosure and could find no reason to require such limitation. [fol. 218] The master is unable to find that the file wrapper and contents place any limitation upon the claims beyond a fair construction of their language viewed in the light of the prior art and the disclosure of the patent. There appears

to be nothing in the prior art to limit the claims to an arrangement of eggs progressively as to age from bottom to top when subjected to a forced air current. The prior art shows such an arrangement but not in combination with a forced draft.

As to the file wrapper, the case of Fullerton Walnut Growers' Assn. vs. Barngrover Manufacturing Co. (9th, C. C. A.) 166 Fed. 433, clearly states the rule,

"In the light of these authorities, it is clear that the claims of the patent, unambiguous as they are, are to be interpreted according to the meaning of their own terms, and are not to be controlled or limited by any argument or representation made in the patent office by the applicant's attorney as to the scope of the invention or the features wherein it differs from the prior art."

A method or process claim cannot be limited to the use of a specific structure to carry it out. Carnegie Steel Co. vs. Cambria Iron Co., 185 U. S. 403. It is particularly to be noted that the claims in suit are method or process claims, and that the novelty rests in the application by a forced draft of a current of air to eggs in various stages of incubation arranged at different levels in closed chambers.

It is proper to consider here the actual physical phenomena as shown in the Smith incubator in practice. The veloc- [fol. 219] ity of the air as impelled by the fans is found to be quite rapid. It is so rapid that a particle of air in a single cycle is not apt to come in contact with but a small number of the eggs in the incubating compartments. For this reason, it is not material to the process that in any one cycle one particle of air should come successively in contact with eggs in each stage of incubation. From the very nature of the process this is impossible in the Smith machine in view of the velocity of the air. However, it is essential that the air be circulated with such velocity that particles of air move around all of the eggs and that the air is so mixed and diffused that heat units are transferred through the mass, so as to maintain a uniform temperature. A uniform temperature is not maintained by a single unit carrying heat from an old egg and transferring it to a new egg, but by the whole mass being circulated, mixed and diffused so rapidly that no part of the chamber can reach a temperature materially at variance with the remainder of

the chamber. During the process heat is transferred by the medium of the air from the older hot eggs to the newer cold eggs. If we disregard the small amount of air that is constantly changing through the restricted openings, the air is circulated in closed cycles, and the order in which the eggs are arranged does not seem to affect the process, so long as the eggs are arranged at different levels so that the circulating air may reach all of them.

By including in Claim 2 reference to the application of air from one chamber to another, in contrast with the omission of such a reference in Claim 1, shows upon the face [fol. 220] of the patent an intention to limit Claim 2 to a process carried out in a machine with a separate chamber or corridor in which the air currents are generated, and it also shows a clear intention not to so limit Claim 1.

Prior Decisions.—The patent in suit has been the subject matter of extensive litigation. Several prior decisions have been urged as definitely settling certain questions raised as to the scope of the claims in suit. The same decisions in some cases are relied upon by each party insofar as they sustain their contentions. All of these decisions are in agreement in holding the patent valid. It is difficult to determine the state of facts before the various courts. In the Sixth Circuit the latest decision casts doubt upon and removes the authority of a prior decision announcing a limitation. The cases of The Buckeye Incubator Company vs. Wolfe (D. C.- 291 Fed. 253, affirmed (6th C. C. A.) 296 Fed. 680; The Buckeye Incubator Company vs. Cooley (D. C.) unreported affirmed (3rd C. C. A.) 17 Fed. (2nd) 253; The Buckeye Incubator Company vs. Stone (D. C.) unreported—all hold the patent valid and infringed without going into any questions as to the scope of Claims 1 and 2. Buckeye vs. Miller (D. C.) affirmed Fed. (2nd) turns upon an issue that is not here in point. The following cases pass upon the scope of the patent: Buckeye vs. Blum (D. C.) 17 Fed. (2nd) 456; same case (6th C. C. A.) 27 Fed. (2nd) 333; Buckeye vs. Petersime, District Court decisions unreported (6th C. C. A.) 19 Fed. (2nd) 721; Buckeye vs. Hillpot (D. C.) 22 Fed. (2nd) 855; (3rd C. C. A.) 24 Fed. (2nd) 341; Boling vs. Buckeye (D. C.) 33 Fed. (2nd) 347.

[fol. 221] The cases in this group principally are concerned with two questions:

(1) Is the patent limited to a particular character of air movement—i. e., circulation in definite channels as distinguished from agitation or churning?

(2) Must the circulating air be first propelled over the eggs in the later stages of incubation and thence to eggs in less advanced stages?

Upon the first proposition the decisions in the Blum, Petersime, and Hillpot cases are substantially in agreement. In the Blum case the District Court found that the air was agitated by paddle-wheels which gave the air no particular direction but had a churning and stirring effect. No fan-impelled currents were involved. Upon this finding a conclusion of non-infringement was reached, which was affirmed in the Circuit Court of Appeals for the Sixth Circuit. In the Petersime case the District Court found that a reel around the egg trays stirred but did not drive the air. There was no fan in the machine. This decision discussed all of the claims together, referring to the patent as a combination patent, and decides that the defendants did not infringe on one or the other of two grounds, one of which apparently was based upon a conclusion that all of the elements of the patented combination were not used by the defendant. Claims 1 and 2 were in issue, and it follows that the court was passing upon these claims. The decision was affirmed by the Circuit Court of Appeals for the Sixth Circuit.

[fol. 222] The Hillpot case differs somewhat in the state of facts from the two cases mentioned above, in that the defendant's structure showed the use of fans. However, the Circuit Court of Appeals found that although the air left the fans in a definite current, the current did not persist but instead broke up and the air wandered where it pleased. Upon this finding the judgment of the District Court holding the patent not infringed was affirmed. It follows that both the Third and Sixth Circuits are in agreement that the process of Claims 1 and 2 is limited to the use of definitely impelled currents of air as distinguished from the churning, mixing, or agitating effect of paddles or reels or of indefinable currents from fans. Upon the second proposition there is confusion in the Sixth Circuit and possible conflict between the Sixth and the Third Circuits. In the Hillpot case the District Court held that Smith had

limited his claims to "the passing of the air currents from the eggs in the more advanced stages of incubation to those in less advanced stages of incubation". It is evident that by his reference to the Petersime case in this connection the court intended to limit this to one cycle—i. e., that the air leaving the fans must pass first over the oldest eggs. While affirming the decision upon the findings discussed under the first proposition, the Circuit Court of Appeals differed from the conclusions of the District Court. The Circuit Court said (p. 344):

"But when, as in Smith, the air moves in cycles through corridor and tiers it makes no difference after the first cycle which way it moves through the egg trays, whether [fol. 223] from bottom to top or from top to bottom, or whether it first strikes warm eggs or first strikes cool eggs, for in every cycle after the first current when passing warm eggs will gather up their heat units and carry them to the cool eggs precisely as claimed and will in the same way produce that uniformity of temperature which is the thing sought by the art and achieved by the invention."

It is clear that the court found no limitation as to sequence in which the air from the fans passes over the eggs.

In the Petersime case, as before noted, the District Court found that there were no definite currents of air in the defendant's machine. In reviewing this case the Circuit Court of Appeals for the Sixth Circuit expressed the opinion that the Smith process required the air to be first passed over the older eggs. Later the same court, in passing upon the Blum case and affirming it upon the finding of an absence of definite currents, states (p. 333):

"Counsel now point out, with much force, that in a case where the air does not come in from the outside in large volume, and that in any case during the circuits after the first one, no one point in the circuit gets the air ahead of any other point, in an absolute way. Which point gets it first depends upon where we consider the circuit to begin. We think we need not consider the effect of this defect in the reasoning—if it is a defect—of our former opinion."

[fol. 224] It is reasonable to construe this language as indicating that the question is as yet undecided in the Sixth Circuit. If the expression of the court in the Petersime

case is to stand there is a conflict between the Third and the Sixth Circuits upon this proposition. The master's opinion and his finding is that there is no limitation which requires that the process claimed in Claims 1 and 2 be carried out by first passing the air currents over eggs in the later stages of incubation.

The decision in the case of Boling vs. Buckeye (supra) in the Southern District of Ohio, wherein a reversal of the air currents is held to avoid infringement, must be recognized as irreconcilable with the conclusions herein reached.

To observe one of the plaintiffs' incubators in operation, wherein 52,000 eggs are in process of incubation at one time, and compare it with the small incubators of the prior art, leads to the conclusion that Smith's disclosure was an important departure, revolutionizing the practice of an old art. It has all the earmarks of a meritorious invention and must be so credited.

The Defendant's Structure.—It was stipulated that the defendant Waxham has used a machine manufactured by J. L. Robbins and known as the Robbins incubator, Model 23. One of these machines is in evidence as plaintiffs' Exhibit 13. Exhibit 9 consists of four photographs of Exhibit 13. Plaintiffs' Exhibit 8 is the catalogue giving the manufacturers' description of the machine. It is constructed in the form of a single large compartment or chamber with doors in front. On the left-hand side are racks holding a [Fol. 225] tier of trays. In the right and central portions of the chamber a number of racks holding egg trays are mounted on an axle. The racks are so constructed that trays are arranged at different levels from top to bottom. A crank on the outside of the machine is provided to turn the axle and move the racks and trays forward 45° or rearward 45°. This turns the eggs. Upon the rear wall of the chamber are mounted two large fans. These turn upon axles extending through to the back of the wall where pulleys and belts connect them to an electric motor. Vents are provided in the top and back to permit the escape of foul air and the intake of fresh air to such an extent as to provide the incubating eggs with oxygen and remove carbon dioxide. Electric heaters and water pans are placed near the floor at the rear of the chamber. The heaters are thermostatically controlled, while the moisture is regulated by varying the amount of fresh air taken into the chamber.

Fresh eggs are placed in trays and put in the racks of the tilting section on the right. No particular order is followed, except that the user is advised not to place trays of eggs in the same stage of incubation close together. The trays once placed are not moved until the eighteenth day. At that time the eggs are placed in deeper trays and moved to the stationary or so-called hatching racks on the left. Here they are left until the chicks are hatched. As the oldest eggs are moved out of the tilting racks, fresh eggs are put in their places so that eggs, in various stages of incubation are always in the racks at different levels. The two fans at the rear are operated at a speed of around 220 revolutions [fol. 226] per minute. Being of large size they practically cover the wall of the chamber, and due to their close proximity to the wall act to drive the air centrifugally toward the sides, top, and bottom of the chamber and to draw the air inward at their center.

Due to the interpretation that Claims 1 and 2 of the patent have received, definite findings upon the exact nature of the movement of air within the chamber are necessary to determine if there is identity or equivalency between the method of Robbins and the method of Smith. The evidence on this point has been greatly clarified by the substantial agreement of the experts for both parties (Taggart and Daugherty). The plaintiff's proof is in agreement with representations made by Robbins in the case of Petersime vs. Robbins, in the District of Colorado (Plaintiffs' Exhibit 17). The master observed experiments on the Robbins machine in evidence and upon a similar machine in actual use at the Goddard Hatchery near Gardena. The air in the Robbins machine is driven outwardly from the sides of the fans and forwardly along the walls of the chamber at a speed of around 900 feet per minute. The air strikes the front wall of the chamber and turns inwardly at about 250 feet per minute. It passes through and around the trays on returning to the fans at speeds varying from 40 to 350 feet per minute, increasing as it nears the vortex of the fans to as high as 600 feet per minute. Anemometer tests in machines both empty and filled with eggs showed that the air was moving in definite paths throughout the whole mass of eggs with perhaps one exception along the left [fol. 227] edge of the stationary trays where the outgoing and incoming air forms eddies for the space extending two

or three inches across. This space is a very small part of the whole. The testimony of Taggart, based upon observation made in an empty machine, and illustrated by Exhibits 10, 11, and 12, is subject to the correction of Daugherty's Exhibits D and E, which illustrate his measurement in a machine filled with eggs. The currents, as demonstrated in a machine at Goddard's Hatchery, move in the manner illustrated by Taggart, except that there is a very definite increase of velocity and volume of air passing through the space between the hatching trays and tilting trays (line X-Y in Exhibits D and E). This current is such that little of the air driven forward at the left wall of the machine passes over the tilting trays on its return to the fan. The air upon returning to the fans is again thrown out so that in the continuing cycles at the velocity maintained all of the air within the chamber is thoroughly circulated and diffused, so that a part of the air passing along the left wall on one cycle will be thrown out in some other direction and in another current on the next cycle. Practically all of the air in machine is moving in definite measurable currents at all times. The capacity of the fans is approximately 12,000 cubic feet per minute. The temperature of the eggs is maintained within the limits necessary to successful incubation. It follows that this is done by transferring heat units from the older eggs to the newer eggs through the medium of the circulating air.

[fol. 228] Infringement.—The defendant's contentions upon the issue of infringement are several. It seems unnecessary to consider differences in structure unless those differences are such as to result in a difference in the process they carry out. Upon the point raised as to the lack of partitions in the Robbins machine, to direct the air currents in the manner of the curtains 3 and 4 in the Smith machine, it is a question as to whether or not the lack of such directing means causes the machine to function other than to

"* * * apply a current of air, said current being created by means other than variations of temperature and of sufficient velocity to circulate, diffuse and maintain the air throughout the chamber at substantially the same temperature, whereby the air will be vitalized, the moisture conserved and the units of heat will be carried from the eggs

in the more advanced stage of incubation to those in a less advanced stage."

The question is answered by the findings made as to the currents in the Robbins incubator as compared with the currents in the Smith machine. It was found that there was no substantial difference in the velocity of the currents and that in both machines there were definite currents passing through and around eggs, with the effect of keeping them at a uniform temperature. Over the eggs in the tilting trays the lowest velocities were in the neighborhood of 40 feet per minute. The absence of curtains or partitions in the Robbins machine is compensated by increased fan capacity. The two fans of Robbins have a capacity of approximately 12,000 cubic feet compared with a capacity [fol. 229] of the four in Smith of 6,000 cubic feet per minute. It is evidnt that by omitting positive directing means such as partitions Robbins has impaired the efficiency of his machine in using greater fan capacity to obtain the same velocities. That a process or structure is less efficiently applied than a patent specified is no defense to a charge of infringement,—King Ax Co. vs. Hubbard, 97 Fed. 720; Elyria Iron & Steel Co. vs. Mohegan Tube Co., 17 Fed. (2nd) 827; Standard Brands vs. Federal Yeast Corpn., 38 Fed. (2nd) 329—or that the process is carried out by an apparatus or mode differing from that specified in the patent—Tilgham vs. Proctor, 103 U. S. 707.

There appears to be no difference in the method of applying currents in the Robbins machine and that specified in the patent. The same object is in view and the results are the same, i. e., the eggs are held at a uniform temperature. The practical result of permitting incubators to be built in units of large egg capacity is attained by Smith with a 52,000 egg capacity and Robbins with a 23,000 egg capacity.

The contention that infringement is avoided because the air currents in the Robbins machine, upon leaving the fans, do not first pass over the oldest eggs is determined by the previous consideration given the subject under the discussion of the scope of the patent. To find infringement it is only necessary to find that eggs in more than one stage of incubation, arranged at more than one level in a close chamber with restricted openings, are subjected to the air currents previously discussed and defined. That the hatching

[fol. 230] eggs (eggs after the eighteenth day) are placed in separate trays not in the same tiers with other eggs, does not affect the question as long as eggs in different stages are placed at different levels in the chamber. This is done in the tilting racks.

The openings at the top and back of the Robbins machine are of such a capacity and are so used that they provide—

"for the escape of foul air without undue loss of moisture."

There has been no contention raised to the contrary.

From the above it is concluded that the defendant in the use of the Robbins incubator has infringed Claim 1 of the patent in suit.

As previously pointed out, the inclusion in Claim 2 of the language, "a power driven current of heated air in an adjacent chamber," and the failure to include such language in Claim 1, shows a clear intention to limit the claim to a process carried out in a machine with at least two distinct chambers. The Robbins machine has but a single chamber and it would be illogical to recognize a theoretical division of that chamber in view of the language of the claim. Because the Robbins machine does not drive the air from a separate chamber to the egg compartment, Claim 2 is not infringed.

Wherefore, the master finds:

1. That this is an action in equity arising under the patent laws of the United States and falling within the jurisdiction of this court;

[fol. 231] 2. That title to Letters Patent No. 1,262,860 is vested in the plaintiff, Samuel B. Smith, and that the plaintiff, The Buckeye Incubator Company, holds an exclusive license to manufacture, within certain limits, under the said Letters Patent;

3. That the said Letters Patent and, particularly, Claims 1 and 2 thereof, are good and valid in law;

4. That Claim 1 of said Letters Patent has been infringed by the defendant.

5. That Claim 2 of said Letters Patent has not been infringed by the defendant.

It is recommended that a decree be entered in conformity with this report, that an accounting of profits and damages be had, that an injunction issue against the defendant enjoining those acts herein found to infringe the patent in suit.

This report was prepared in a drafted form and submitted to counsel to permit the filing of exception and suggestions for correction. Both parties offered certain suggestions, which, in the main, have been adopted. The plaintiffs excepted to the ruling on Claim 2. This exception is denied.

Returned herewith is the file in the case together with the transcript of testimony, exhibits, and other papers relating to the proceedings on reference.

Respectfully submitted, (Signed) David B. Head,
Special Master.

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[fol. 232] PLAINTIFF'S EXHIBIT No. 21

IN THE UNITED STATES DISTRICT COURT FOR THE DISTRICT OF CONNECTICUT

In Equity. No. 2369

SAMUEL B. SMITH, Plaintiff,

vs.

A. B. HALL and L. C. HALL, d. b. a. HALL BROTHERS, Defendants

STIPULATION

It is hereby stipulated and agreed by and between Counsel for the parties hereto, that certified copies of testimony previously taken in other cases upon the Smith patent, to-wit:

Buckeye Incubator Co., et al. v. Cooley, D. C., N. J.;
Buckeye Incubator Co., et al. v. Archie E. Stone, District of Oregon;
Smith v. James Manufacturing Co., D. C., N, Y.;
Smith v. Street, D. C., Minnesota;

relating to the so-called "Hastings' prior use", may be offered by either party and received in evidence in the in-

stant case with the same force and effect as though it had been taken herein.

It is further stipulated and agreed by and between Counsel for the parties hereto, that the title to the patent in suit is as alleged in the Bill of Complaint, and that the plaintiff [fols. 233-254] is entitled to recover for all infringements of the patent in suit.

A. C. Ely, Attorney for Plaintiff.

Cleveland, Ohio, May 31, 1935.

Arthur E. Paige, Attorney for Defendants.

Philadelphia, Pa., June 3, 1935.

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PLAINTIFF'S EXHIBIT No. 22

Opinion of Supreme Court of the United States, No. 102, October Term, 1934, omitted. Printed side page 145, ante.

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[fols. 255-257] Opinion of Supreme Court of the United States, No. 208, October Term, 1934, omitted. Printed side page 167, ante.

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[fol. 258] IN THE UNITED STATES DISTRICT COURT FOR THE DISTRICT OF CONNECTICUT

In Equity. No. 2369

SAMUEL B. SMITH, Plaintiff,

vs.

A. B. HALL and L. C. HALL, d. b. a. HALL BROTHERS, Defendants

Findings of Fact

This is a bill to restrain infringement of claim 1 of patent No. 1,262,860 granted to Samuel B. Smith April 16, 1918, and the cause is now before the Court on a motion for a preliminary injunction.

1. The validity of claim 1 of the Smith patent in suit No. 1,262,860 was sustained by a decision of the Supreme Court of the United States dated on or about the 7th day of January, 1935, and the defendants for the purposes of this case did not contest the validity of this claim.

2. The title to the patent in suit is in the plaintiff, Samuel B. Smith, a resident of Cleveland, Ohio, and the said plain-
[fol. 259] tiff is the sole party in interest and entitled to all recoveries so far as the Robbins incubators Nos. 17, 23 and 26 I, used by the defendants, are concerned.

3. The defendants, A. B. Hall and L. C. Hall, are doing business at Wallingford, Connecticut, in the hatching of eggs under the name and title Hall Brothers.

4. The defendants have used and are using in their business in the incubation of eggs incubators known as Robbins Nos. 17, 23 and 26 I, or similar incubators.

5. These incubators involve the principles of incubation set forth in claim 1 of the patent in suit.

6. The practice of removing the eggs from the incubators on or about the 18th day and placing them in a separate compartment for the balance of the full twenty-one days of the hatching period does not constitute a departure from the principles of the Smith invention as covered in claim 1 of the patent in suit.

(Sgd.) Carroll C. Hincks, United States District Judge.

February 27, 1935.

[fol. 260] IN THE DISTRICT COURT OF THE UNITED STATES FOR THE SOUTHERN DISTRICT OF INDIANA

(New Albany Division—Transferred to Indianapolis)

In Equity. No. 89

SAMUEL B. SMITH, Plaintiff,

vs.

CLARENCE A. SIMS and CLARENCE A. SIMS d. b. a. THORNWOOD POULTRY YARDS and THORNWOOD HATCHERIES, Defendants

Pursuant to Equity Rule 70½ the Court now states its special Findings of Fact and Conclusions of Law as follows:

## Findings of Fact

The Court now states the facts in the above-entitled cause to be as follows, to-wit:

(1) This is a patent suit in which the Plaintiff Samuel B. Smith, a citizen of the United States and resident of Cleveland, Ohio, charges that the Defendant, Clarence A. Sims of Crandall, Harrison County, Indiana, personally and doing business as Thornwood Poultry Yards and Thornwood Hatcheries, infringed claim 1 of Plaintiff's patent No. 1,262,860 issued to Plaintiff April 16th, 1918.

[fol. 261] (2) That Plaintiff is, and has been since April 29th, 1927, the owner of the aforesaid patent No. 1,262,860 and of all rights thereunder.

(3) Hen's eggs incubate in about 21 days. During the first ten to eleven days heat must be applied thereto to initiate the growth of the embryo. During the following seven to eight days the growth of the embyro generates heat some of which must be abstracted from the egg in order that the embyro may properly develop. By the eighteenth day the eggs may be safely withdrawn from the incubating chamber to an independent chamber where chick emergence will occur provided proper temperature and humidity are maintained.

(4) The essence of the Smith invention is the concurrent incubation of eggs in various stages of endothermic and exothermic condition in an atmosphere of heated air in movement exceeding that due solely to temperature variations in such manner as to facilitate transfer of heat from exothermic eggs to endothermic eggs.

(5) For the purpose of disclosing a manner of practicing the method defined by the claim in suit, Plaintiff's patent illustrates and describes an incubator structure comprising a chamber of room size divided by two suspended curtains, the lower ends of which are spaced above the floor, into a medial corridor and two flanking incubating compartments. In each incubating compartment are several vertical racks for the reception of interchangeable egg trays and the intermediate portion of each of these racks is so formed that [fol. 262] the egg trays therein may be tilted about horizontal axes in order that the eggs in those trays may be properly tilted, or "turned" during a desired stage of incubation. Within the chamber in the upper regions of the medial corridor are several electric fans capable of producing downwardly impelled air currents the air for which is derived from air in the upper region of the corridor, some of that air being fresh air drawn into the chamber by said fans. The air currents produced by the fans pass beneath the curtains, thence upwardly around the eggs and back to the fans, a small portion of the air passing out of the chamber through restricted openings leading from the upper regions of the incubating compartments. Within the upper part of the chamber are heating coils to furnish necessary heat and a steam supply to furnish necessary moisture.

The procedure specifically described for utilization of this structure involved initial insertion of fresh eggs in the upper regions of the incubating chambers and successive lowering of the eggs as incubation progressed until they arrived in the lower regions immediately prior to emergence of the chicks.

In the operation of this structure air heated by eggs in later stages of incubation is forcibly moved into contact with eggs in earlier stages of incubation so that heat, generated by said later eggs, is transferred to said earlier eggs.

The chicks emerged in the lower regions of the incubating compartments.

(6) Defendant has engaged in the incubation of eggs (including hen's eggs) and has utilized therein an incubator [fol. 263] structure comprising a chamber of room size having two longitudinal series of vertical racks for the reception of interchangeable egg trays, one series along each side of the chamber and spaced apart so as to form a medial corridor. Spaced along the corridor are several vertically-arranged open-ended drums or cylinders within each of which is a heating coil. Above each heating coil and within the upper end of the cylinder is an electric fan capable of producing downwardly-impelled air currents which emerge from the lower ends of said cylinders and are deflected laterally to the lower regions of the egg-tray racks. Between each pair of the above-mentioned cylinders, near the lower ends, is an electric fan each having a horizontal axis. These fans are alternately set in opposite directions, each so as to horizontally impel air currents toward an egg-tray region. There are two other horizontal-axis electric fans one at each end of the chamber beyond the end vertical cylinders and facing toward an egg-tray region and facing in a direction opposite to the next adjacent horizontal axis fan.

There are also several vertical-axis downwardly-directed electric fans in the upper part of the chamber in the vertical zones of the egg-tray racks, some along one side of the chamber and others along the other side.

Moisture-containing troughs are arranged lengthwise of the chamber in the upper part of the corridor zone and beneath each series of tray racks.

Inlets for fresh air lead through the side walls of the chamber beneath the egg-tray racks and restricted outlets for foul air lead through the side walls of the chamber from [fol. 264] points above the uppermost egg-trays.

Defendant's trays are so constructed that the eggs may be tilted or "turned" therein.

(7) Defendant has also engaged in the incubation of eggs (including hen's eggs), by utilizing therein an incubator structure comprising a chamber of room size having two longitudinal series of vertical racks for the reception of interchangeable egg trays, one series along each side of the chamber and spaced apart so as to form a medial corridor. Spaced along the corridor are several vertically-arranged open-ended drums or cylinders within each of

which is a heating coil. Within each cylinder is an upwardly-directed vertical axis electric fan capable of producing upwardly-impelled air currents which emerge from the upper ends of said cylinders and are deflected laterally by the ceiling of the chamber to the upper regions of the egg tray racks. In this instance the air supply for these upwardly-impelled air currents is drawn from the lower regions of the egg tray racks. Between each pair of the above-mentioned cylinders, at a somewhat higher level than the similar fans in the structure described in Finding No. (6), is an electric fan each having a horizontal axis. These fans are alternately set in opposite directions, each so as to horizontally impel air currents toward an egg tray region. In this structure also there are two other horizontal axis electric fans, one at each end of the chamber beyond the end vertical cylinders and facing toward an egg tray region and facing in a direction opposite to the next adjacent horizontal-axis fan. In this structure there are no vertical-[fol. 265] axis downwardly-directed electric fans. Moisture-containing troughs are arranged lengthwise of the chamber in the upper part of the corridor zone and beneath each series of tray racks.

Inlets for fresh air lead through the side walls of the chamber beneath the egg-tray racks and restricted outlets for foul air lead through the side walls of the chamber from points above the uppermost egg trays.

Defendant's trays are the same as those used in the structure described in Finding No. (6).

(8) In the utilization of the structures defined in findings (6) and (7) Defendant has inserted egg-bearing trays in the several vertical racks at time intervals and in such vertical-spacing that eggs in various stages of incubation ranging from initial introduction up to eighteen days of incubation would be vertically distributed throughout each tray-rack, in general the tray distribution being such that each tray would be vertically flanked by a tray bearing eggs in a different stage of incubation.

Trays bearing eggs which had been subjected to eighteen days of incubation were withdrawn to an independent chamber where chick emergence occurred.

(9) During the entire period of incubation, as described in findings Nos. (6), (7) and (8) the several electric fans

have been actuated to cause a forced movement of air such as to result in a transfer of heat from eggs in late states of incubation to eggs in the early stages of incubation, and such as to cause entry of a limited amount of fresh air into [fol. 266] the chamber and escape of a limited amount of foul air from the chamber without undue loss of moisture and the air throughout the chamber has been maintained substantially uniform.

(10) The prior art does not disclose the method defined by claim 1 of the patent in suit.

(11) At the time of, prior to, and since the filing of the bill of complaint herein, Defendant engaged in the use of the incubator structures described in findings Nos. (6) and (7) and engaged in the practices described in findings Nos. (6), (7) and (8) and in claim 1 of patent No. 1,262,860.

(12) Other than the incubators used by him in his business, Defendant has not manufactured or sold incubators designed to facilitate practice of the method defined by claim 1 of the patent in suit.

## Conclusions of Law

Upon the foregoing Findings of Fact the Court now states its Conclusions of Law.

(1)

The Smith patent No. 1,262,860, as to claim 1 thereof is good and valid in law and Defendant has infringed the same.

(2)

That Plaintiff is entitled to an accounting from Defendant of Defendant's gains, advantages and profits resulting [fol. 267] to Defendant, since July 13, 1927, because of Defendant's aforesaid infringement, and that this cause be referred to Albert Ward as Special Master in Chancery to take and report such accounting.

(3)

That, as the patent in suit will expire April 16, 1935, no injunction should issue provided Defendant file with this

Court not later than March 13, 1935, his bond with surety to the approval of the Court, in the sum of Five Thousand Dollars conditioned that Defendant will pay to Plaintiff all damages, gains and profits to which he may be entitled from and after the date of the entry of the decree in this cause to and including the date of the expiration of the patent in suit for the infringement of such patent by Defendant. If such bond be not so filed within said time, the Plaintiff will be entitled to an injunction upon application therefor.

(4)

That Plaintiff is entitled to its costs herein to be taxed.

Robert C. Baltzell, U. S. District Judge.

March 8th, 1935.

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[fol. 268] In the United States District Court for the District of Minnesota

In Equity. No. 2723

Samuel B. Smith, Plaintiff,

vs.

L. W. Street and L. W. Street d. b. a. Street's Hatchery & Poultry Farm and Street's Hatchery & Poultry Farm, Defendants

On Motion for Preliminary Injunction

Findings of Fact and Conclusions of Law

This cause came up for hearing on plaintiff's motion for preliminary injunction, affidavits and exhibits which were filed for each side and oral arguments by counsel for each side were had upon February 11, 1935, and briefs were filed by each side on February 21, 1935, and additionally defendant Street filed a supplemental affidavit on February 21, 1935.

Upon consideration of the pleadings in this case, motion papers, all affidavits, exhibits, oral arguments and briefs of counsel, the following are adopted as the Findings of Fact and Conclusions of Law:

[fol. 269] 1. Plaintiff is a citizen of the United States and a resident of Cleveland, Ohio, and so was at the commencement of this action.

2. Defendant Street individually at the commencement of this action resided at Osseo, Hennepin County, Minnesota, and still so does and defendant Street, doing business as Street's Hatchery & Poultry Farm, was at the commencement of this action and still is located at Osseo, Hennepin County, Minnesota, where defendants are engaged in and doing business in the commercial hatching of eggs.

3. That this suit arises under the patent laws of the United States and this Court has jurisdiction thereof.

4. On October 26, 1916, the plaintiff, Samuel B. Smith, filed in the United States Patent Office an application for letters patent of the United States for said improvement.

5. That prior to April 16, 1918, Samuel B. Smith assigned the right, title and interest in and to said invention and in and to any United States patent to issue thereon to The Buckeye Incubator Company, a corporation of Ohio, and that after due proceedings upon said application for patent there was issued to The Buckeye Incubator Company, aforesaid, United States Letters Patent No. 1,262,860 on April 16, 1918, whereby the exclusive right of making, using and selling the said invention and improvements throughout the United States for the term of said patent [fol. 270] was granted to The Buckeye Incubator Company, aforesaid, its successors or assigns.

6. That under date of April 29, 1927, The Buckeye Incubator Company, aforesaid, being then the owner of the title in and to the aforesaid Letters Patent, did sell, assign, and transfer to the plaintiff, Samuel B. Smith, his heirs and assigns, the right, title and interest in and to the said Letters Patent.

7. That the plaintiff and his predecessor in title, The Buckeye Incubator Company, have been at all times the sole and exclusive owners of said patent.

8. That incubators manufactured and sold by the plaintiff have been marked "Patented," with the date and number of the patent aforesaid, as required by the Statutes of the United States, and that in addition the defendants

herein were, before the commencement of this suit, duly notified in writing of the patent aforesaid and of their infringement thereof.

9. That defendant, prior to and not more than six years before the filing of the bill of complaint herein, have used in the hatching of eggs at their place of business at Osseo, Minnesota, Lower Incubators made by Lower Incubator Company of White Pigeon, Michigan, and operated them in accordance with the invention of Smith patent in suit No. 1,262,860 and are threatening to continue the use of such incubators, thereby infringing the rights of the plaintiff as secured by said patent, all without license or consent of plaintiff.

[fol. 271] 10. That by reason of the infringement complained of herein, plaintiff has suffered and is suffering loss and damage and defendants have realized profits and gains which of right belong to plaintiff.

11. The Smith patent No. 1,262,860 as to claims 1 thereof was adjudged valid and infringed by decree of this Court of February 7, 1933, in Smith v. Snow, Equity No. 2119 and following writ of certiorari issued by the Supreme Court of the United States to the Circuit Court of Appeals for the Eighth Circuit the Supreme Court by its decision of January 7, 1935 (Smith v. Snow, Docket No. 102, October Term, 1934) reversed the Appellate Court and held Claim 1 of said patent valid and infringed and following receipt of mandate to this Court by the Supreme Court, permanent injunction was again awarded and issued March 4, 1935.

12. The Smith patent No. 1,262,860 is not anticipated by any of the defenses and is valid, particularly as to Claim 1 thereof.

13. Defendants in the use of the Lower incubators shown in Plaintiff's Exhibits 5, 6 and 7 set eggs in various stages of incubation and do not avoid infringement by removing the eggs at the eighteenth day, at which time the chickens are about to emerge from the shells, because the egg-development has been by the use of two characteristic principles of the Smith invention, viz., "staged incubation" and "forced draft," and infringement is not avoided by using

the patented process less efficiently. Waxham v. Smith, [fol. 272] Docket No. 208, October Term, 1934, U. S. Supreme Court, opinion delivered January 7, 1935.

14. Defendant L. W. Street by his affidavit dated February 20, 1935, and filed in this cause on February 21, 1935, changes defendant Street's prior affidavit to represent that he did use the infringing staged incubation during the 1934 hatching season but during the 1935 hatching season asserts his intent to use only "single stage incubation."

15. Defendant Street by his affidavit dated March 5, 1935, and filed in this cause, avers that defendants herein have not on such date any eggs set in staged incubation in their hatchery and poultry farm at Osseo, Minnesota, or elsewhere.

16. This Court, having found that the patent-in-suit is valid and Claim 1 is infringed by this defendant, concludes that preliminary injunction should be awarded to enjoin and restrain defendants (until further order of this Court but in no event longer than April 16, 1935, which is the date of expiration of the patent-in-suit) from directly or indirectly infringing Claim 1 of the Smith patent-in-suit, and particularly from using in the incubation of eggs within the United States any machine of the structure exemplified in Plaintiff's Exhibits 5, 6 and 7 attached to the affidavit of Joseph I. Taggart filed herein and referred to in the motion papers as Lower incubator No. 10, or similar incubators, in such manner as to infringe Claim 1 of said Smith Patent-in-suit, save and except as to any incubator purchased [fol. 273] by defendants or any of them from The Buckeye Incubator Co. made and sold under any license or authority from the plaintiff herein.

(Sgd.) Matthew M. Joyce, United States District Judge.

St. Paul, Minnesota, March 8, 1935.

IN THE DISTRICT COURT OF THE UNITED STATES, SOUTHERN DISTRICT OF INDIANA, TERRE HAUTE DIVISION

In Equity. No. 149

SAMUEL B. SMITH, Plaintiff,

vs.

CHARLES W. JOHNSON, d. b. a. JOHNSON HATCHERY, Defendant

## Findings of Fact

This cause having come on for trial, and having been heard in open Court upon testimony and upon arguments of counsel, the Court states the facts therein to be as follows, to-wit:

1. This is a patent suit in which the plaintiff Samuel B. Smith, a citizen of the United States and a resident of [fol. 274] Cleveland, Ohio, charges that defendant Charles W. Johnson, of Linton, Indiana, personally, and doing business as Johnson Hatchery, has infringed claim 1 of patent No. 1,262,860, issued April 16, 1918.

2. The plaintiff is and has been since April 29, 1927, the owner of the aforesaid patent No. 1,262,860, and of all rights thereunder, including the right to sue and all recoveries, by virtue of assignment from The Buckeye Incubator Company, of that date.

3. The period of incubation of hens eggs is twenty-one (21) days, during the first ten or eleven days of which period heat must be applied to the eggs; during the remainder of the period the eggs give off excess heat which must be removed in order to carry on successful incubation. By the eighteenth day the growth of the embyro has reached such an extent that the eggs may be safely transferred to a separate chamber where the chicks emerge from the shell, provided proper temperature and humidity are maintained.

4. The essence of the Smith invention, and of claim 1 of the patent, is the incubation of eggs in a substantially closed chamber, by subjecting a plurality of eggs in various stages of incubation to an environment of heated air in

motion, propelled by fans, or the like, so that the movement of the air is in excess of such movement as arises solely from temperature variations. The air equalizes the temperature of all the eggs, and conducts heat units from [fol. 275] eggs in a more advanced state of incubation to those in a less advanced state of incubation.

5. The patent in suit shows a particular form of apparatus for carrying on the process of claim 1, and a particular procedure, but the process set forth in claim 1 may be carried on by setting eggs in various stages of incubation in a substantially closed chamber, having restricted openings to permit limited amounts of fresh air to enter and foul air to leave the chamber, without undue loss of moisture; and propelling a current of air over said eggs; the details of the apparatus and the particular procedure set forth in the specification of the patent not being essential to the successful performance of the process of claim 1 of the patent.

6. During the six years preceding the filing of the Bill of Complaint, the defendant has operated incubators for the hatching of eggs, known as "Robbins Incubators," which are the same or similar to the Robbins Incubator which was held to be an infringement of claim 1 of the patent in suit, by the Supreme Court of the United States in Waxham v. Smith, 55 Sup. Ct. Rep. 277; by the Circuit Court of Appeals of the Ninth Circuit in Waxham v. Smith, 70 F. (2) 457.

7. The incubators used by the defendant are designated as Robbins No. 23, Robbins No. 23-H and Robbins No. 26-I.

The Robbins No. 23 incubator comprises a single cabinet provided on its rear wall with two large fans which circulate air through the cabinet in current form, the air moving [fol. 276] forwardly around the walls, ceiling and floor, and returning through the central portion of the cabinet. Small openings for the interchange of limited amounts of foul and fresh air are provided in the cabinet. In the cabinet is a large tilting drum in which egg trays are arranged in superimposed trays and in which the eggs are placed at intervals of three to four days, so that when the drum is filled it contains eggs in various stages of incubation. At the side of the tilting drum are arranged stationary racks which are approximately one-sixth of the capacity of the

tilting drum. At the eighteenth day the eggs, which have been in the tilting drum for that period, are removed to the stationary racks where the chicks hatch, in the same room.

The Robbins No. 23-H incubator is substantially the same as the No. 23, with the following exceptions: The interior of the cabinet is divided by a vertical partition into a large and small compartment. In the large compartment is located a tilting drum similar to the tilting drum in the Robbins No. 23 incubators; in the smaller compartment are arranged the stationary hatching racks similar to those in the No. 23 incubator. A single, large fan is located at the center of the rear wall in the larger compartment, and two small fans are located on the rear wall in the smaller compartment. The fan in the large compartment circulates the air in current form through the compartment, as described in the No. 23 incubator. The eggs are set in the tilting drum as described in connection with the Robbins No. 23, and are moved on the eighteenth day to the stationary racks for the hatching of the chicks.

[fol. 277] The Robbins No. 26-I differs from the Robbins No. 23 only in that the whole compartment is filled with a large tilting drum of the same design as the No. 23 or No. 23-H, in which eggs are set at the same intervals. The fan arrangement and circulation of air in the No. 26-I is the same as in the Robbins No. 23. At the eighteenth day the eggs, which have reached that stage of incubation, are removed to a separate hatching cabinet which has a capacity of one-third of a No. 26-I incubator.

8. In all of the Robbins Incubator models specified above, the air moves in all current form through eggs set at different levels in various stages of incubation, in a substantially closed chamber, having restricted openings which permit the admission of limited amounts of fresh air and escape of limited amounts of foul air, without undue loss of moisture, whereby the air will be maintained at substantially the same temperature throughout the chamber, the moisture conserved and the units of heat carried from eggs in a more advanced stage to those in a less advanced stage.

9. At the time of filing of the Bill of Complaint herein, and prior thereto, the defendant has been engaged in the incubation of eggs in which he has utilized the incuba-

structures and has engaged in the practises described in paragraph 7, and as covered by Claim 1 of the patent in suit.

(Sgd.) Robert C. Baltzell.

[fol. 278] Conclusions of Law

Upon the foregoing Findings of Fact the Court now states its conclusions of law:

(I)

The Smith patent No. 1,262,860, as to claim 1 thereof, is good and valid in law, and Defendant has infringed the same.

(II)

Plaintiff is entitled to an accounting from Defendant of Defendant's gains, advantages and profits resulting from the infringement of the patent, and this cause be referred to Albert Ward as Special Master in Chancery, to take and report such accounting.

(III)

As the patent in suit expired April 16, 1935, no injunction shall issue.

(IV)

The plaintiff is entitled to his costs herein to be taxed.

(Sgd.) Robert C. Baltzell, U. S. D. J.

Indianapolis, Ind., April 26, 1935.

[fol. 279] UNITED STATES DISTRICT COURT, DISTRICT OF MINNESOTA, FOURTH DIVISION

Equity. No. 2723

SAMUEL B. SMITH, Plaintiff,

vs.

L. W. STREET and L. W. STREET, Doing Business as STREET'S HATCHERY & POULTRY FARM, Defendants

Findings of Fact and Conclusions of Law

This cause came duly on for hearing before the undersigned, one of the judges of said court, and was tried to the court on the 18th and 19th days of April, 1935, at the Federal Building, in the city of Minneapolis, state of Minnesota.

Appearances:

Ely and Barrow of Cleveland, Ohio, and Paul, Paul & Moore appeared for the plaintiff; Chappell & Earl and Williamson and Williamson appeared for the defendants.

After considering all of the files and records herein, the evidence adduced at the trial and the arguments of counsel, the court concludes and finds as follows:

Findings of Fact

1. Plaintiff is a citizen of the United States and a resident of Cleveland, Ohio, and so was at the commencement of this action.

[fol. 280] 2. Defendant Street individually at the commencement of this action resided at Osseo, Hennepin County, Minnesota, and still so does and defendant Street, doing business as Street's Hatchery & Poultry Farm and Street's Hatchery & Poultry Farm, was at the commencement of this action and still is, located at Osseo, Hennepin County, Minnesota, where defendants are engaged, and doing business, in the commercial hatching of eggs.

3. That this suit arises under the patent laws of the United States and this Court has jurisdiction thereof.

4. That the defense of this cause was initially conducted by C. M. Lower Incubator Company of White Pigeon, Michigan, and is now conducted by Lower Incubator Corporation of White Pigeon, Michigan, which purchased the assets of said C. M. Lower Incubator Company.

5. On October 26, 1916, plaintiff, Samuel B. Smith, filed in the United States Patent Office, an application for Letters-Patent of the United States for Improvements in Incubators.

6. That prior to April 16, 1918, Samuel B. Smith assigned the right, title and interest in and to said invention and in and to any United States Patent to issue thereon to The Buckeye Incubator Company, a corporation of Ohio, and that, after due proceedings upon said application for patent, there was issued to The Buckeye Incubator Company aforesaid, United States Letters-Patent No. 1,262,860 [fol. 281] on April 16, 1918, whereby the exclusive right of making, using and selling said invention and improvements throughout the United States for the term of said patent were granted to The Buckeye Incubator Company, aforesaid, its successors or assigns.

7. That on April 29, 1927, The Buckeye Incubator Company reassigned said patent to plaintiff, Samuel B. Smith, together with all claims and demands in law or equity for past infringement and the right to sue and recover therefor.

8. On April 29, 1927, contemporaneously with the reassignment of said patent and said invention to plaintiff, Samuel B. Smith, The Buckeye Incubator Company, aforesaid, and said Samuel B. Smith entered into two contracts, one granting a license to The Buckeye Incubator Company for the manufacture and sale of incubators under said patent, which incubators have an egg capacity of sixteen thousand five hundred (16,500) eggs and under, said licence being exclusive in The Buckeye Incubator Company for incubators of these sizes, and the second contract being one under the terms of which the duty of bringing suits for all infringements and the rights to all recoveries were vested in the plaintiff, Samuel B. Smith, regardless of the size of the infringing incubators and, therefore, The Buckeye Incubator Company was not a necessary party to this action.

9. That plaintiff and his predecessor in title, The Buckeye Incubator Company, have been at all times the sole and exclusive owners of said patent.

[fol. 282] 10. That defendants, prior to and not more than six (6) years before the filing of the bill of complaint herein, have used in the hatching of eggs at their place of business at Osseo, Hennepin County, Minnesota, six (6) Lower incubators, each having a stated capacity of seven thousand nine hundred twenty eggs (7,920) in the incubating compartment and two thousand six hundred forty (2,640) eggs in the hatching compartment, which incubators were made by C. M. Lower Incubator Company of White Pigeon, Michigan, and operated them in accordance with the invention of the Smith patent-in-suit No. 1,262,860, thereby infringing the rights of plaintiff as secured by said patent, all without the license and consent of plaintiff.

11. That said Lower incubator used by the defendants herein, comprises an incubating compartment having restricted openings for the escape of limited amounts of foul air and the intake of corresponding amounts of fresh air, and in which eggs were arranged in superposed tiers and subjected to the action of currents of air generated by a fan located within the incubating compartment; and that defendants have set eggs in said incubating compartments in staged incubation, and in the operation of said incubators the temperature of the incubating compartments was equalized by the carrying of units of heat from eggs in a later stage of incubation to those in an earlier stage; and that removing the eggs from the incubating compartment on the eighteenth (18th) day and transferring them to a separate compartment for the completion of the hatching operation did not, and does not, avoid Claim 1 of the Smith [fol. 283] patent-in-suit but did and does constitute infringement thereof.

12. That by reason of the infringement complained of herein, plaintiff has suffered loss and damage and defendants have realized profits and gains which of right belong to plaintiff.

13. The Smith patent-in-suit No. 1,262,860 is not anticipated by the prior art and is valid as to Claim 1 thereof.

14. That no additional evidence has been presented in regard to the alleged Hastings prior use which in any way adds to previous testimony in regard thereto which has been offered in the following cases:

(1) Buckeye Incubator Co. v. Wolf, 291 Fed. 253 (N. D. Ohio W. D.), affirmed, 296 Fed. 650 (C. C. A. 6th), (2) Buckeye Incubator Co., et al. v. Cooley (D. N. J., unreported), affirmed 17 Fed. (2d) 463 (C. C. A. 3d), (3) Buckeye Incubator Co., et al. v. Stone (D. Oregon, Maguire, Special Master, unreported), (4) Smith v. Sims, et al. (S. D. Indiana, J. Baltzell, unreported),

and that said evidence as to said alleged Hastings use fails to establish an anticipation of Claim 1 of the patent-in-suit and shows that the prior attempts of Hastings to solve the problem of mass incubation did not embody the principles of the Smith invention and were failures and abandoned by Hastings and those associated with him, and the so-[fol. 284] called Hastings use does not anticipate the invention of Claim 1 of the Smith patent-in-suit.

15. Claim 1 of the Smith patent-in-suit was held valid and infringed by the Supreme Court of the United States in the case of Smith v. Snow, et al., 55 S. Ct. 279; 79 L. ed. 283, and also in the case of Waxham v. Smith, 55 S. Ct. 277; 79 L. ed. 293, and that in the case of Smith v. Snow, the decision of the Supreme Court defined the invention of the Smith patent as follows:

"(a) the arrangement of the eggs at different levels in staged incubation in a closed chamber, having restricted openings of sufficient capacity for the escape of foul air without undue loss of moisture; (b) the application to the eggs of heated air in a current created by means other than variation of temperature; and (c), as marking the boundaries of the claim, the current of air is to be of sufficient velocity to circulate, diffuse and maintain the air throughout the chamber at substantially the same temperature whereby the air will be vitalized, moisture conserved, and the units of heat carried from the eggs in the more advanced stages to those in the less advanced."

And further, the Supreme Court said, in the same opinion

"it is plain from what has been said that the character of the patent and its commercial and practical success are such [fol. 285] as to entitle the inventor to broad claims and to a liberal construction of those which he has made."

that the practice of incubation in Lower No. 10 incubator used by these defendants comes within the scope of Claim 1 as defined by the Supreme Court.

16. That defendants do not avoid infringement of Claim 1 of the Smith patent because the egg-development has been by the use of two characteristic principles of the Smith invention, viz., "staged incubation" and "forced draft," and infringement is not avoided by using the patented process less efficiently. Waxham v. Smith, 55 S. Ct. 277; 79 L. ed. 293.

17. That the Smith patent-in-suit having expired April 16, 1935, permanent injunction is not awarded.

18. That the preliminary injunction heretofore awarded plaintiff in this cause and which expired April 16, 1935, was not improvidently granted and therefore the bond or undertaking heretofore filed herein by plaintiff may be released.

Conclusions of Law

1. That plaintiff is entitled to recover from the defendant the profits, gains and advantages which said defendants have received, or which may have accrued to them by reason of their infringement of Claim 1 of said Smith patent-in-suit No. 1,262,860, of April 16, 1918.

2. That plaintiff is entitled to have this cause referred to a Master for an accounting and it is hereby referred to Howard S. Abbott, as Special Master of this Court, Room [fol. 286] 314 Federal Building, Minneapolis, Minnesota, who is hereby appointed to ascertain, state and report to the court a true and correct account of the extent of the infringement by the said defendants, or any thereof, of said Claim 1 of said Smith patent No. 1,262,860, and also the amount of the gains, profits and advantages which said defendants have received from said infringement of Claim 1 of said patent, and the amount of damages, which said plaintiff has suffered, if any, by reason of said infringement of said defendants of Claim 1 of said patent, and the plain-

tiff, on said accounting, shall have the right to cause examination of the officers, servants, agents and employes of said defendants, ore tenus, or otherwise, and also to examine other witnesses and to cause production and examination of the books, vouchers and documents of said defendants and to have all necessary process of the court to compel such attendance and production before said Special Master, at such times and places as he shall, from time to time, direct.

3. That plaintiff is entitled to recover from said defendants the taxable costs of the plaintiff in this Court and that plaintiff is entitled to have judgment and execution against said defendants for said costs.

4. That an interlocutory decree be submitted in accordance with these Findings of Fact and Conclusions of Law,

Dated at Minneapolis, Minnesota, this 1st day of May, 1935.

Joseph W. Molyneaux, United States District Judge.

[fol. 287] The defendants' requests for Findings of Fact and Conclusions of Law are hereby denied and defendants are given an exception to the ruling of the court.

Joseph W. Molyneaux, United States District Judge.

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In the United States District Court for the Western District of Oklahoma

No. 1628 E

Samuel Smith, Plaintiff,

vs.

R. W. Hankins, d. b. a. Hankins' Hatchery & Dairy, Defendant

Findings of Fact and Conclusions of Law

This cause having come on for trial, and having been heard in open court, and the Court being fully advised in the premises, the Court states the following Findings of Fact and Conclusions of Law:

## Findings of Fact

### I

This is a patent suit in which the plaintiff, Samuel B. Smith, a citizen of the United States and a resident of [fol. 288] Cleveland, Ohio, charges that defendant, R. W. Hankins of Alva, Oklahoma, personally, and doing business as Hankins Hatchery & Dairy, has infringed claim 1 of patent No. 1,262,860, issued April 16, 1918.

### II

The plaintiff is, and has been since April 29, 1927, the owner of the entire right, title and interest in the said patent together with the right to sue to recover all recoveries for infringement of the said patent.

### III

The patent in suit is valid, particularly as to claim 1 thereof.

### IV

During the period of six years prior to the filing of the Bill of Complaint herein and until the issuance of the restraining order in this case on April 4, 1935, the defendant has operated, in the commercial hatching of eggs, at his place of business at Alva, Oklahoma, incubators known as Robbins No. 23 and Robbins No. 23-H.

### V

Defendant has also sold and/or leased four other incubators, known as the Robbins No. 23, during the period of six years prior to the filing of the Bill of Complaint herein.

### VI

The Robbins No. 23 Incubator referred to in paragraphs IV and V hereof, is identical with the incubator held to be [fol. 289] an infringement of Claim 1 of the patent in suit, in the decision of the Supreme Court of the United States in Waxham v. Smith, 55 Sup. Ct. Rep. 277. It comprises a single chamber in which are located a large tilting egg drum in which eggs are set at intervals of approximately

three days, and stationary hatching racks to which the eggs are transferred on the eighteenth day for the hatching of the chicks. The No. 23-H incubator is substantially the same as the No. 23 incubator except that the stationary hatching racks are separated from the tilting drum by a vertical partition. The eggs in the tilting drum are set at the same intervals. In each of said incubators No. 23 and 23-H the air is propelled in current form through the tilting egg drum by a large fan, or fans, and the chambers are provided with small openings for the intake of fresh air and exhaust of foul air.

VII

Claim 1 of the patent in suit has been infringed by the operations of the Robbins No. 23 Incubator by the defendant in the manner described in paragraph 6 hereof; the defendant has not avoided claim 1 by transferring the eggs on the 18th day of the hatching period to a separate hatching chamber, but has also infringed upon the said claim in the operation of the Robbins No. 23-H in the manner described in the said paragraph.

VIII

The defendant has also infringed upon the patent in suit, either directly or contributorily, by the sale and/or leas- [fol. 290] ing of Robbins No. 23 Incubators, as set forth in paragraph V hereof.

IX

The Incubators manufactured and sold by the plaintiff and its licensee, The Buckeye Incubator Company, have at all times been marked "Patented" with the date and number of the patent in suit; and in addition the defendant has been duly notified in writing of the patent and his infringement thereof.

X

The manufacturer of the Robbins Incubators referred to above, The Robbins Incubator Company, engaged counsel for the defendant, prepared the answer filed herein and otherwise directed and controlled the defense of this suit

preparatory to the final hearing, but did not appear or defend the action at the hearing.

XI

By reason of the infringements complained of and specified in paragraphs VII and VIII hereof, the plaintiff has suffered loss and damage and the defendant has realized profits and gains which of right belong to the plaintiff.

Upon the foregoing Findings of Fact, the Court now states the following:

Conclusions of Law

I

The Smith patent 1,262,860 as to claim 1 thereof is good and valid in law.

[fol. 291]

II

The defendant has infringed upon the same.

III

Plaintiff is entitled to an accounting from the defendant of defendant's gains, profits and advantages, and to the damages suffered by the plaintiff by reason of the infringement of the said patent.

IV

That this cause be referred to the Hon. James B. Cullison, as Special Master in Chancery, to take and report such accounting with his recommendations therein, subject to review by this Court, and the plaintiff shall be entitled to adequate processes of this Court to recover such amount as shall be awarded herein.

V

As the patent in suit expired April 16, 1935, no injunction shall issue.

VI

The plaintiff is entitled to his costs in this cause herein to be taxed.

Edgar S. Vaught, U. S. District Judge.

Oklahoma City, Oklahoma, May 2, 1935.

[fol. 292] UNITED STATES DISTRICT COURT, EASTERN DISTRICT OF WISCONSIN

In Equity. Civil Docket 4387

SAMUEL B. SMITH, Plaintiff,

vs.

F. J. LE MIEUX, LA PLANT HATCHERIES, Defendants

## Findings of Fact and Conclusions of Law

This cause having come on for trial and having been heard in open Court upon the pleadings, testimony of witnesses, and arguments of counsel, and the Court being fully advised in the premises, and upon consideration thereof, states as follows:

### Findings of Fact

1. That the parties are residents and citizens respectively as alleged in the Bill of Complaint.

2. That Patent No. 1,262,860 was issued April 16, 1918, to The Buckeye Incubator Company, a corporation of Ohio, and was assigned to the plaintiff on April 29, 1927, together with all rights to sue for infringement and to recover therefor.

3. That infringement of claim 1 of the above patent is alleged, and that the said claim is valid, and that Samuel B. [fol. 293] Smith was the first, sole, true, and original inventor of the improved method of hatching eggs described in said patent and set forth particularly in claim 1 thereof.

4. That the defendants during the period of 6 years prior to the filing of the Bill of Complaint and since that time, have owned and operated at their places of business at Green Bay, West Bend, Clintonville, Sawyer, Gillett, and Watertown, Wisconsin, certain incubators known and designated as follows:

Robbins No. 19

Robbins No. 23 both with and without separate hatching compartments

Robbins No. 26-I

and have operated such incubators by setting the eggs therein in staged incubation, i. e., setting fractional parts of the incubator at intervals of from three to four days.

5. That the incubators enumerated in paragraph 4 hereof are the same or substantially the same in construction and mode of operation as the Robbins incubators No. 23 which were involved in the case of Waxham vs. Smith, reported in 55 Sup. Ct. Rep. 277.

6. That the defendants have not avoided infringement upon the process described in the Smith patent and set forth in claim 1 thereof by separating the hatching compartment from the incubating compartment or by placing a partition therebetween, in the Robbins No. 23 incubators, nor by removing the eggs from the Robbins No. 26-I in-
[fol. 294] cubators on the 18th day of the incubating period and placing them in a separate cabinet or chamber for the balance of the hatching period.

7. That the Smith patent in suit covering the process of hatching or incubating eggs by placing them in staged incubation in a cabinet or room provided with restricted openings for the interchange of limited amounts of foul and fresh air, and having fans or the like to produce sufficient current movement of the air to maintain the temperature of the incubator substantially uniform throughout, is entitled to a liberal interpretation, and is of sufficient scope to cover all of defendants' operations of said Robbins incubators.

8. That the patent in suit is not invalid either for incorrectly or incompletely disclosing the principles of the invention.

9. That the defendants have infringed claim 1 of the patent in suit by the operation of the incubators listed in paragraphs 4 and 6.

10. That the defense herein has been conducted by the manufacturer, the Robbins Incubator Co., of Denver, Colorado, which directed and prepared the Answer and engaged counsel to defend the case and participated in the trial thereof.

11. That the patent in suit having expired April 16, 1918, no injunction shall issue.

12. That the preliminary injunction heretofore awarded [fol. 295] plaintiff in this cause, and which expired April 16, 1935, was not improvidently granted.

Conclusions of Law

1. That claim 1 of patent No. 1,262,860 is valid and has been infringed by the defendants.

2. That plaintiff is entitled to recover the gains, profits, and advantages which defendants have received and the damages which plaintiffs have suffered.

3. Plaintiff is entitled to recover the taxable cost to be assessed against the defendants and to have judgment and execution against the defendants therefor.

4. That the bond filed herein by the plaintiff be released.

5. That an interlocutory decree be submitted in accordance herewith.

F. A. Geiger, United States District Judge.

Milwaukee, Wisconsin, May 14, 1935.

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[fol. 296] In the United States District Court, Western District of Missouri, Western Division

In Equity. No. 2682

Samuel B. Smith, Plaintiff,

vs.

Fred Boehm, d. b. a. Garden City Hatchery, Defendant

Findings of Fact and Conclusions of Law

This cause having come on for trial and having been heard in open court and the Court being fully advised in the premises, the Court states the following Findings of Fact and Conclusions of Law:

Findings of Fact

I

This is a patent suit in which the plaintiff, Samuel B. Smith, is the owner of the patent in suit and the defendant,

Fred Boehm, is a resident of Garden City, Cass County, Missouri, where he operates and has operated during the period of six years prior to the filing of the Bill of Complaint, a commercial hatchery under the name of Garden City Hatchery.

[fol. 297] II

The patent in suit is valid, particularly as to claim 1 thereof.

III

During the period of six years prior to the filing of the Bill of Complaint herein the defendant has operated one or more incubators known as Robbins #23 incubators.

IV

The defendant has infringed upon claim 1 of the patent in suit by the operation of the Robbins #23 incubators.

V

By reason of the infringement complained of and stated in paragraphs III and IV, the defendant has realized profits which of right belong to the plaintiff.

Conclusions of Law

I

The patent in suit and claim 1 is valid and defendant has infringed the same.

II

Plaintiff is entitled to an accounting from the defendant of defendant's profits realized by the defendant in infringement of claim 1 of the patent in suit.

[fol. 298] III

As the patent in suit expired April 16, 1935, no injunction shall issue.

IV

That this cause be referred to Robert B. McCreight as Special Master in Chancery, to take and report such accounting and the amount of profits which the defendant has received from the infringement of claim 1 of the patent.

V

The plaintiff is entitled to his costs in this cause to be taxed.

VI

That an interlocutory decree be submitted in accordance herewith.

Merrill E. Otis, United States District Judge.

May 23, 1935.

---

[fol. 299] In the United States District Court, Eastern District of Michigan, Northern Division

In Equity. No. 555

Samuel B. Smith, Plaintiff,

v.

F. Kribs and Herbert L. Kribs, d. b. a. Fred's Hatchery, Defendants

Final Decree

(Filed May 29, 1935)

This cause having come on for hearing and having been heard in open court, the Court being advised as to the premises, it is hereby Ordered, Adjudged and Decreed:

1. That the patent in suit, No. 1,262,860, dated April 16, 1918, is valid, particularly as to Claim 1 thereof.

2. That the defendants have infringed Claim 1 of said patent by the use during the period of six years prior to the filing of the bill of complaint of incubators known as Robbins No. 26-I incubators.

[fol. 300] 3. The parties having reached a settlement no accounting will be ordered herein.

4. Each party shall pay its own costs.

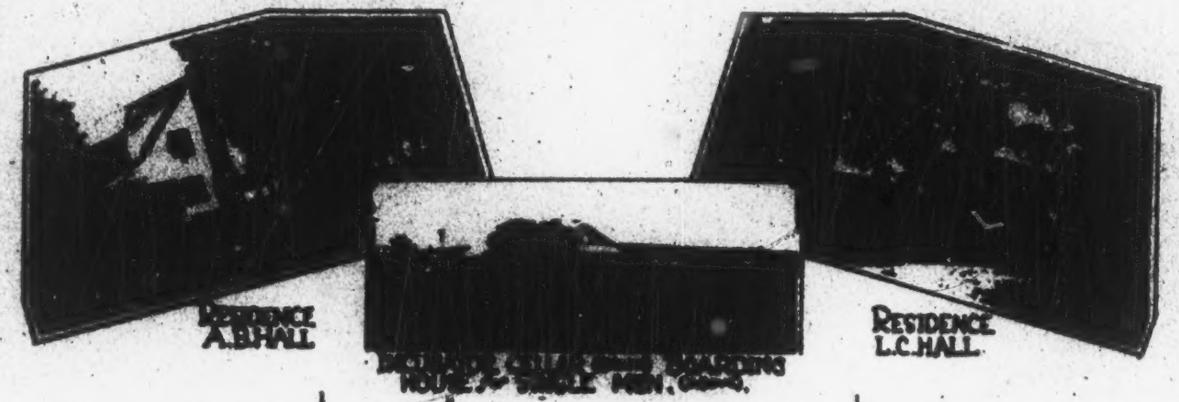
(Signed) Arthur C. Tuttle, U. S. District Judge.

Bay City, Michigan, May 29, 1935.

Approved as to form: A. L. Ely, Counsel for Plaintiff. [illegible] & Des Jardins, Counsel for Defendants.

PLAINTIFF'S EXHIBIT No. 23

# Hall Brothers Have One of the Finest Breeding Farms in New England



RESIDENCE A.B.HALL

RESIDENCE L.C.HALL

HALL BROTHERS OPERATED 10 ROBBINS' INCUBATORS LAST SEASON OR 215,000 CAPACITY.

THERE IS ANOTHER STORY OF SUPERIOR QUALITY, EASIER OPERATION AND LOWERED COSTS.

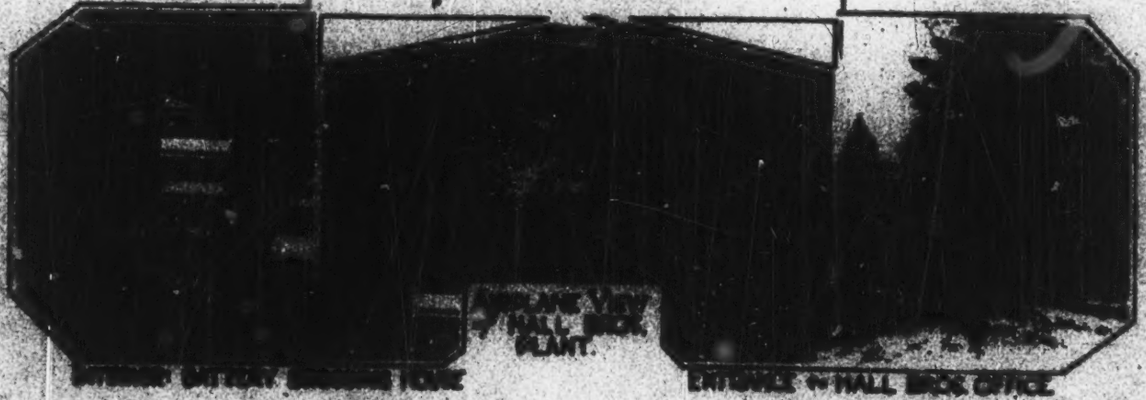
Hall Brothers

POPLAR HILL FARM

Wallingford, Conn.

EXTERIOR of BROODER HOUSE

INCUBATOR CELLAR



AERIAL VIEW of HALL BROS. PLANT.

EXTERIOR of HALL BROS. OFFICE.



301

**15% Increase in 1931 due to Growing Demand for Robbins chicks — Hall Brothers had 16 Robbins Incubators for the season of 1931 and have purchased 3 more for 1932!**

A. B. HALL L. C. HALL

**Hall Brothers**

POPLAR HILL FARM

Wallingford, Conn.

June 16th, 1931.

The Robbins Incubator Company,
[illegible] Street,
Denver, Colo.

Dear Sirs:

Our operations during the past season have been entirely with Robbins equipment, and we are pleased to report a very satisfactory season.

As you know, we added two [illegible] multi-hatchers, making a total of over [illegible] egg capacity. We have always had the very best results with the [illegible] and [illegible], but we are of the opinion that the multi-hatcher is just a little easier to operate in that we can always maintain the same amount of moisture during the incubating period, and also raise the humidity at hatching time to the desired point. We feel that we have obtained slightly better hatches and greater uniformity, if that were possible, with this new equipment.

On our old machines we have used the new belts and the humidifiers which you sent [illegible] charge, and have been able to [illegible] tire capacity without the necessity of a [illegible].

We do practically no [illegible], but the demand for our chicks has [illegible] season, so that our total output has been [illegible] above last year. We are quite [illegible] hatcheries have not sold as many chicks during this season, and are willing to give the Robbins Incubators credit for producing chicks which are as near perfect as it is possible to hatch.

Wishing you continued success, we are

Very truly yours,

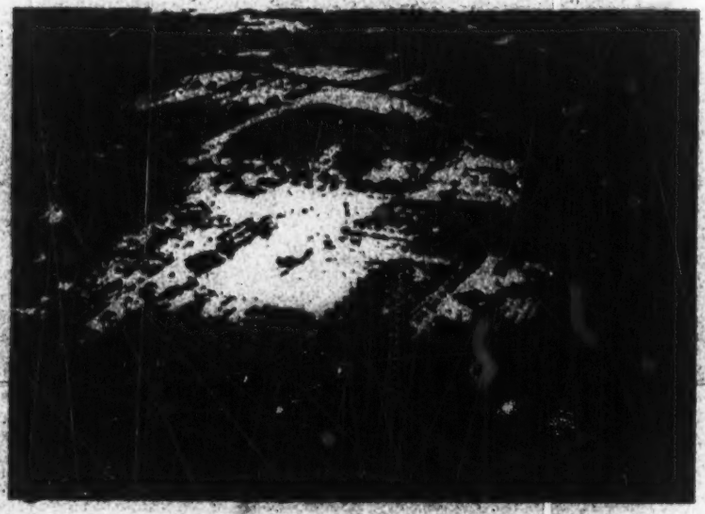
HALL BROTHERS,

A B Hall

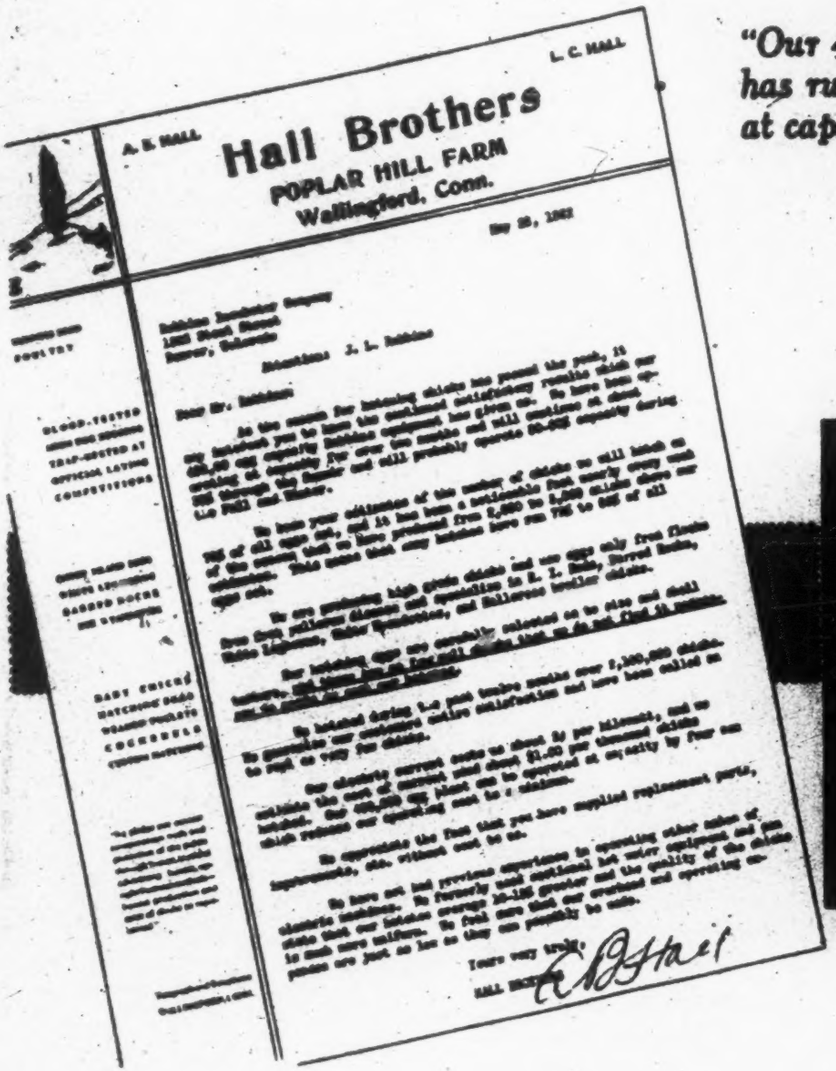
Plaintiff's Ex. No.
U. S. Dist. Co.
Dist. of Conn.
[illegible] 193[illegible]

**These Hall Brothers are air-minded.**

**Below is an airplane view of Poplar Hill Farm. A. B. Hall went to the Louisville Convention of I. B. C. A. by airship.**



**Hall Brothers are thoroly acquainted with the Robbins Multi Incubator-Hatcher. This report contains interesting comments on results.**



A. E. HALL — L. C. HALL

**Hall Brothers**

POPLAR HILL FARM

Wallingford, Conn.

May 28, 1952

Robbins Incubator Company
1201 Ninth Street
Denver, Colorado

Attention: J. L. Robbins

Dear Mr. Robbins:

At the season for hatching chicks has passed the peak, it is needless for us to have the continued satisfactory results which we are enjoying Robbins equipment has given us. We have been operating at capacity for over two months and will continue at about [illegible] through the summer and will probably operate 50-60% capacity during [illegible] and winter.

In both your estimates of the number of chicks we will hatch on the 400,000 egg unit, and it has been a noticeable fact nearly every week of this season that we have produced from 2,000 to 5,000 chicks above our estimates. This means that our hatches have run 75% to 85% of all eggs set.

We are producing high grade chicks and are eggs only from flocks free from pullorum disease and specialize in R. I. Reds, Barred Rocks, White Leghorns, White Plymouth Rocks, and Hollywood broiler chicks.

Our hatching eggs are carefully selected as to size and shell texture, [illegible] and are set in the best clean [illegible] all chicks are sold on the basis of chicks that hatch.

We hatched during 1-2 peak months over 2,100,000 chicks. To guarantee our customers entire satisfaction and have been called on to hatch as many for chicks.

Our chicks average weigh at about 2½ per kilowatt, and we estimate the cost of current used about $1.00 per thousand chicks hatched. Our 400,000 egg plant can be operated at capacity by four men which reduces our operating cost to a minimum.

We appreciate the fact that you have supplied replacement parts, [illegible] etc. without cost to us.

We have not had previous experience in operating other makes of chicks incubators. We formerly used mechanical hot water equipment and can state that our Robbins averages 20-25% greater and the quality of the chicks is much more uniform. We find more than one advantage in your equipment we just as low as they can possibly be sold.

Yours very truly,

HALL BROTHERS

E. B. Hall

*"Our 400,000 egg capacity Robbins equipment has run 75% to 85% of eggs set, and operated at capacity by only four men."*

**Hatched 2,100,000 chicks in 12 months... and practically no replacements.**

Airplane view of Hall Brothers' Poplar Hill Farm, one of New England's finest breeding farms.

PLAINTIFF'S EXHIBIT No. 25

PLAINTIFF'S EXHIBIT No. 28

# How Would You Like to Be Able to Write a Check for $5,000.00 as Part Payment for 250,000 Additional Incubating Capacity?

HALL BROTHERS No. 11951
BABY CHICKS

Wallingford, Conn. Oct. 6th 1933

Pay to the order of The Robbins Incubator Co. $5000.00

Five thousand and 00/100 Dollars

To The First National Bank
Wallingford, Conn.

HALL BROTHERS

*A. B. HALL*, who wrote this check, also wrote: "The excellent results we have secured with Robbins Incubators in the last five years have had much to do with our splendid growth in the hatchery business."

*In another letter, this summer, Mr. Hall wrote:* "We value our Robbins equipment very highly, as we have been able to maintain the quality of our chicks and increase our volume in spite of very keen competition."

HALL BROTHERS *Chicks*
Wallingford Conn.

October 6th, 1933

Robbins Incubator Company
1888 Stout Street
Denver, Colorado

Dear Sirs:

We are enclosing our check for $5,000.00 as agreed, to be applied against our purchase of one-quarter million egg capacity in the new Robbins Model 68.

The excellent results we have secured with Robbins incubators in the last fifty years have had much to do with our splendid growth in the hatchery business.

After buying our first Robbins incubators we conducted hatching tests with them in competition with our sectional machines. We found the Robbins produced 10% to 20% larger hatches, and better quality chicks. From a conservative Yankee standpoint, we realized we could not afford to waste time trying to sell our sectional machines, in order to make room for Robbins equipment; therefore we junked them without delay.

We steadily increased our Robbins equipment until we had 450,000 capacity. Our records for last year show we produced 75% to 80% high-grade chicks from all eggs set. We run at full capacity with only four men, and never had to keep a night man on the job at all. (We used to need six men to operate only 160,000 capacity in our sectional machines).

This summer we had booked orders for over one-half million chicks for shipment before January, 1934, and saw we needed more incubation in August. We measured the makes at the Grand Rapids Convention in August. We measured their same-as-modern claims against Robbins proven results. We examined the many improvements made in the Robbins since we bought our first one in 1888.

Although we could have purchased other machines for less money, we decided to, and did, place our order with you for 250,000 additional Robbins capacity, because we were sure it would not in any other way invest the same amount of money in incubating equipment to equal advantage. We are confident this decision will prove as profitable and satisfactory to us as our original decision to buy a Robbins years ago.

Yours very truly,

HALL BROTHERS

304

198

PLAINTIFF'S EXHIBIT No. 27

305

# OBBINS NEWS

...r Co. SEPTEMBER, 1934 Boyne, Colorado

## Batcherymen's Answer To The Big, Bad Wolf

...EVERY YEAR, it seems, just before or ... the I. B. C. A. Convention, owner of our ... manage to "work up" some propaganda ... benefit of Convention visitors, in the ... with the sole of Robbins Incu...

...efforts have quite uniformly failed in the ... they have proved boomerangs to those ... them as much as batcherymen. "Let ... Hatch, Hatch your Robbins leadership ... and more dividends." Nevertheless, ... to learn from experience, there ... continue their efforts.

... the business, one Incubator Company ... one Robbins move for an injunction, ... restrainment, or what-not.

## ... is the Answer—

... sales of Robbins Incu... were made at the Cleve... Convention this summer ... any I. B. C. A. Conven... 1929!

... And most of them were ... as batcherymen living in ... —the state where our ... factories are lo...

## The Same Old Racket

### *Some Straight Talk About Litigation and The Smith Incubator Company*

THE HATCHERY INDUSTRY as a whole is in conflict with the owners of the Smith and Sullivan Incubator Companies, in which the Robbins Incubator Company is vitally interested, because of the recent suit of Smith against Robbins, Sullivan and others, including Hatcherymen from Minnesota and a Mr. [illegible] from California.

Other incubator companies are also using this patent litigation, in a desperate attempt to confuse their customers and hinder the sale of the preferred Robbins machines.

### What Are the FACTS?

Smith recently lost a U. S. Circuit Court case regarding his patent. He also won a Circuit Court case affirming the same patent. Because of the conflict between these two decisions, and other questions which unfortunately are too technical to discuss here, Smith was obliged to appeal his case to the United States Supreme Court for review.

Smith's attorneys have literally admitted the conflict between the decision in the California case, and decisions of other Circuit Courts on the Smith patent. Having no alternative, they have necessarily in requesting the U. S. Supreme Court to review the case.

This confirms the opinion we have often expressed that the Supreme Court ultimately would have the opportunity to [illegible] the question of the Smith patent against Smith's contentions, and we are now convinced it is possible at this time that the case will be so decided that the Continuous Hatch will be overthrown.

[illegible] and all other [illegible] incubators are now [illegible] on the outcome of Smith's suit against Robbins. [illegible] of the California decision, and the [illegible] Smith's petition for review by the Supreme Court, [illegible] to make the decision [illegible] Smith patent, [illegible] Robbins, Sullivan and other [illegible] would immediately have to quit the field.

### What Would You Do, If You Were In Smith's Place?

What would you do under similar circumstances? If you were in Smith's place, would you [illegible] your case to the Supreme Court [illegible] a chance to win on the facts, and [illegible] the [illegible] of the lower courts? Or would you [illegible] the lower court's decision, [illegible] your business [illegible] accept, and attempt to [illegible] the [illegible] which [illegible] Smith [illegible] Robbins, Sullivan and other [illegible] Hatcherymen [illegible] Smith [illegible] Would you [illegible] your [illegible] in [illegible] of the Robbins [illegible] would you [illegible]?

Would you run around, [illegible] and [illegible] at everyone who gets in your way? Or would you [illegible]

the rights of owners who, unreasonable animals, and much the chief residence of the owner?

After all, this is the United States. It is no crime to operate a duplicate incubator over seven other roofs. In fact, a good many intelligent people think it is a sign of good business sense and excellent judgment to do so!

## Why Has Smith Never Sued Robbins?

A NOTHER QUESTION that naturally arises is: Why hasn't Smith sued the Robbins Incubator Company, instead of scattered individual users of Robbins machines?

If you were a manufacturer, and you thought some competitor was infringing your patent, you would sue that competitor, wouldn't you? You wouldn't go out of your way to "pick on" his widely separated customers.

Smith has consistently avoided litigation with the Robbins Incubator Company, not only in Colorado, which is our home territory, but even in Ohio, which is his own home territory. He knows a damage suit there would result in (what is still pending), but even there Smith refused to enter a cross-complaint for infringement against us. He was hold voluntarily aside under the jurisdiction of the courts in his own district.

Can it be that Smith is more interested in *propaganda and intimidation* than he is in a direct, clear-cut legal determination of the issues involved? *Can it be that Smith looks confidence in the justice of his cause*, but nevertheless believes he can accomplish thru threats, indirectly, what he may be unable to accomplish through the courts, directly?

## The Smith Patent Will Soon Be "Dead as a Door Nail"—It Expires in April

In the meantime, instead of calmly awaiting the orderly settlement of this controversy by the Courts, some [illegible] salesmen seem to be in opposition of a hurry to spread propaganda while the spreading is good. They have told [illegible] that Robbins has stopped making machines, that in another year there won't be any more Robbins Incubators—and another fairy tales.

All this in connection remember, when it is remembered that Smith's patent No. 1,230,049 expires April 16, 1917—only several short months from now. The patent cannot be renewed. After that date it will be a good buy. This is the patent, you remember, to which the Robbins Company, as well as Smith's license, [illegible] machines.

So if any *hatcheryman considering the purchase of an incubator is worried about what values the machine is likely to have in a year or two*, a great deal could be said on this subject—and it would NOT concern ROBBINS Incubators.

Publishing the April expiration of this patent explains the [illegible] appearing at some of the recent meetings our competitors. Maybe they have [illegible] over the world to extend it some months. NOW is when they can, while the "scare-stuff" is still good.

In the meantime, back to ahead of the big, but we'll [illegible] a word about [illegible] are going here!

## Robbins Machines Are Sold Only on MERIT

SO FAR AS THE ROBBINS Incubator Company is concerned, we are willing to sell our machines entirely on the basis of their thinking efficiency. We are anxious to be business, but not on sentiment, that we will agree to make concessions, substitutions or allowances, in an effort to make sales. We don't try to "persuade" our hatcheryman to buy a Robbins by hitting him over the head with a club—sentimental or otherwise—or by holding a gun to his stomach.

You can't hatch chicks with hornets.

If our competitors would spend as much time, energy and money in perfecting their incubators, more closely to approach Robbins efficiency, as they spend in their lies and propaganda, they and the entire industry would be better off.

But they have been subtly trying to "keep Robbins" for so long, with an occult attempt that Robbins has succeeded to get stronger and stronger, you will hardly blame them for wishing you had [illegible] when their patent expires.

## It Takes Incubators, Not Lawsuits, to Hatch Chicks

Hundreds of clear-thinking, successful hatcherymen, whose combined experience covers every make of incubator built, have found that the Robbins offers most for their money, and greatest profit on the investment. These hatcherymen have bought, operated, and made money with, Robbins equipment, despite the fact that some of our competitors have been making horrid faces at them for years, and continue to do so.

*A machine that can rise to leadership—as the Robbins has done—under these conditions, and that receives such constant attention from competitors, MUST have something other incubators don't have!*

Investigate impartially and completely—do your own thinking—and you'll buy a Robbins.

*Sincerely,*

John L. Robbins

President, The Robbins Incubator Co.

# A. B. Hall's Answer to The Big Bad Wolf

HALL BROTHERS
BABY CHICKS
Wallingford, Conn.

No. 14170

Wallingford, Conn. Aug 25 1934

Pay to the order of Robbins Incubator Co. $5000.00

Five Thousand 00/100 Dollars

The First National Bank
Wallingford, Conn.

HALL BROTHERS
A B Hall

[illegible] BROTHERS, [illegible] [illegible] Incubator Company [illegible] [illegible] Robbins

[illegible]'s. Ex. No. 27
[illegible] Dist. Court
[illegible] of [illegible]
6-17 [illegible]

HALL BROTHERS Chicks
Wallingford, Conn.

August 25th, 1934.

Robbins Incubator Company,
1523 Stout Street,
Denver, Colorado.

Attention: J. L. Robbins

Dear Sirs:

As per our letter of July 30th we have definitely decided to place order for model #125, and are enclosing a deposit check for $5,000.00.

With this addition we will have about 750,000 egg capacity, all in Robbins Incubators. We will expect delivery by October 1st, 1934, and will use these machines at once to fill orders already booked for Fall delivery on Barred Rallroads Broiler chicks.

AHH:N
Enc.

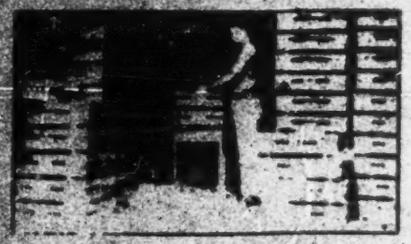
Yours very truly,

A B Hall

[illegible] by a [illegible] from [illegible] [illegible] Incubator Company.

## Ten Years Growth of a Connecticut Hatchery

(Continued from Page 80)



FASTER GROWTH!

ELMORE'S CHIXSAVER

CHICK STARTER

IDEAL FOOD FOR BABY CHICKS

Increasing quality along with quantity.

The inauguration of our Bonus system of paying for hatching eggs has stimulated a new interest among our producers. For many years we paid a flat premium over a regular market. A few years ago we introduced the Bonus Relief Book, the plan still pays the same regular premium but also pays a bonus on a sliding scale for increases in hatchability over 65%. It also calls for a reduction in price for hatchability under 60% to 50%. This has tended to place a certain amount of responsibility for hatchability and quality squarely on the shoulders of the producer. It is most interesting to note the response.

Our increase in volume has necessitated some few changes in buildings, equipment and personnel. In 1932 we added an additional 200,000 incubator capacity. This increase was found to be inadequate, so it was necessary to add another 150,000 last Fall, giving us a total of 750,000 egg capacity or a volume of 150,000 chicks each week when running at full capacity.

With the 1932 increase of a quarter of a million incubator capacity and the resultant increase in chicks emptying on with eggs, we decided to add a Poultry Specialist to our staff. We finally persuaded Ralph Willard to join our organization. Mr. Willard graduated from the Connecticut State College with the class of 1928, and had the advantage of five and a half years of Successful Poultry training with Roy E. Jones. During this period as Assistant Extension Poultryman, he had the privilege of surveying and helping many Connecticut breeders with their poultry problems.

Mr. Willard was then Secretary of Performance Improvement, and in 1930 to 1932 was one of the state leaders in the Pullorum Elimination Program. He then also had considerable practical experience, and for two years worked for breeding under Dr. Stanley A. Jull of the U. S. D. A. Our Poultry Specialist has brought to the organization a valuable knowledge and ability which has proved itself in the year and a half of its association with us.

The 1933 addition featured the construction of a new building, 20 by 32 ft. on the ground level in the basement under. Besides a new office and with two other basements, additional equipment. Last Fall we added one of our old original colony houses to provide for the increase in the new unit of 10,000 pullets on range.

With each new addition it has been necessary to increase our personnel, and this year again, the new unit of 10,000 pullets on range, and the increase in our hatching capacity, has made it necessary to add to our staff. We have a waiting list of over fifty producers who are anxious to supply us with hatching eggs. This fact alone helps materially in maintaining and increasing our quality.

The Railway Express Agency at Wallingford is credible and visible testimony of the increase in the business at Poplar Hill Farm. It was not many years ago that one small shipping room was large enough to accommodate the baby chicks at the depot before being shipped. These quarters gradually became cramped and another room was pressed into service. The last two years has again shown the need of more spacious accommodations for holding chicks until train time, and recently the main waiting room of the station has been commandeered to provide proper holding facilities.

Hatching is now a continuous process at Poplar Hill Farm and has been the case for eight years. This step has been necessary to take care of the demands of the broilermen who keep broilers of chicks coming along at all times of the year. Many of them have standing orders for each three to six week intervals, and, of course, must be catered to in order not to upset their breeding schedules.

The last ten years has seen a great change in demand of various breeds. For broiler purposes the chick demand has changed sharply from Barred Rocks to Barred Hollbrook. Like many new ideas, Barred Hollbrook chicks were tried in secret to test the results along with the straight Rock chicks. The broilermen saw the difference in mortality, rate of growth, and efficiency of feeding, and were quick to take advantage of the hybrid vigor factor. For a couple of years now we have sold more Barred Hollbrook than Barred Rocks for broiler purposes.

White Hollbrook are now being sold widely for Leghorn Broiler production for the frozen trade. These Crosses have the advantage of white feathers plus that of the fast growing vigor and often equal Leghorns in egg and chick production and vigor.

Many Pullets have become a reality in the last ten years, due primarily to the development of pullorum in breeding. Like other animals, the hen and pullet was attacked by disease germs which were destroyed or controlled by the development of immunity. Then came the day of the chemical production and feed control of the pullorum organism, there was a demand for the pullet that would produce eggs the year through. Many breeders had been keeping their pullets for a year to get enough eggs to make it worth while to hatch them.

Another opportunity arising in the breed of the last few years has been in the improvement of the shape of the body. A few years ago the ideal shape was a long body, with a long deep keel. Many of the breeders who have attempted to breed for this shape have found that the chicks were not as vigorous as the chicks with the shorter body and deeper keel. Many breeders have found that the chicks with the shorter body and deeper keel were more vigorous and produced more eggs.

At the prize level in broilers between breed, broiler organization and progress and open shelters was held by the New Hampshire breeders in the production and egg plan. The advantageous features of the New Hampshire breeders developed strains of chicks vigorous breeders that were noted for their low chick mortality, rapid feathering, and economic growth. Much progress was made along these lines and New Hampshires were in much demand.

Many breeders developed strains of chicks vigorous breeders that were noted for their low chick mortality, rapid feathering, and economic growth. Much progress was made along these lines and New Hampshires were in much demand.

ELMORE'S CHIXSAVER

CHICK STARTER

IDEAL FOOD FOR BABY CHICKS

ELMORE MILLING CO., INC., Cheshire, N. Y.

PLAINTIFF'S EXHIBIT No. 29

311

# Smith's Chickagrams

Chicago, August, 1930 No. 8

SAMUEL B. SMITH

[illegible] owner and president of [illegible] Smith Incubator Co. [illegible] Smith Brooder Co. [illegible] Smith Chickagrams [illegible] Smith Poultry Farm.

SMITH'S CHICKAGRAMS [illegible] Monthly from the Office of [illegible] S. WHITE COMPANY 35 South Clark Street Chicago, Illinois

[illegible] It is sometimes valuable [illegible] interesting about The Smith Incubator Company, Cleveland, [illegible], and [illegible], which [illegible] as a whole. The only reason is to contribute each [illegible] based on personal experience [illegible] years, profits, the good and [illegible], and to forward information [illegible] used or reproduced not only [illegible] publications, but by others in [illegible] of which may form an advertisement [illegible] of many value or disinterested [illegible] to the reader.

[illegible] the cooperation of every [illegible] as well as everyone interested [illegible] poultry industry in the end [illegible] Chickagrams may serve the [illegible]

[illegible] communications to SMITH'S CHICKAGRAMS [illegible] South Clark Street, Chicago [illegible] SMITH INCUBATOR CO. [illegible] Cleveland, Ohio

## Plan Advertising Well

Plan now to put pep into your advertising campaign. Every sales dollar is the most part of life days to the building up of the industry of which he is a part," as said Theodore Roosevelt; and businessmen can do no better than heed the wisdom of this great leader. It is not a bit too early to begin to plan for next year's advertising if you expect to help yourself and the industry to which you belong.

Even President Hoover admits that advertising is one of the great assurances of future. Its value is measured chiefly by the thought, care and attention put into it. You can make your advertising most valuable by giving it real serious attention.

Look about you. Consider the successful businessmen that you know. In practically every case these successful businessmen are systematic, and give more or less extensive advertising. They plan their campaigns with wisdom and thoroughness; they intensify to make their advertising appealing; they do not think as a bit or miss plan, regarding every advertisement as being there a young friend; they are in the long run, knowing the rewards at the end to be greater.

Some of our wisest manufacturers make it their regular policy to formulate their advertising plans [illegible] year. They do this because they know that advertising is one of the big items of [illegible] In some instances, [illegible] the advertising itself, must be [illegible] months; otherwise it will not [illegible]

It is well to get good advertising counsel. Advertising counsel from [illegible] agencies is found to [illegible] and ability. Many a businessman [illegible] success to the [illegible] and [illegible] given by his advertising counsel.

Probably the greatest evil in business [illegible] is the disregard for [illegible] should not be any great difficulty in [illegible] advertising appeal on a good [illegible] With knowledge of [illegible] and of [illegible] a businessman, a [illegible] artists and his advertising counsel should be able to plan a systematic campaign that can be shown [illegible] appeal to produce real results in the way of [illegible]

Make up your mind now that your next season's advertising appropriation is going to be made wisely; that it is going to produce as good results as possible immediately, but that some of the results must be looked for in the future. It is just good business to try to [illegible] about you.

## IMPORTANT COURT DECISION

### *User of Robbins Incubator Held to Infringe Smith Patent Rights*

On July 3, 1930, a decision was rendered in the United States Court of the Southern District of California, holding a user of a Robbins Incubator liable for infringement of United States Letters Patent No. 1,262,868, owned by Samuel B. Smith, President of The Smith Incubator Company of Cleveland, Ohio.

The Patent Laws of the United States hold anyone responsible for damages who makes, uses, or sells a device which is held to infringe the rights of the owner of a patent.

[fols. 312 & 313] PLAINTIFF'S EXHIBIT No. 30

August 10, 1932.

Hall Bros., Wallingford, Conn.

GENTLEMEN:

It has been brought to the attention of Samuel B. Smith, the owner of United States Letters Patent No. 1,262,860, that you have been using incubators which are known as Robbins Incubators, manufactured and sold or furnished to you by John L. Robbins, doing business as Robbins Incubator Company of Denver and Edgewater, Colorado.

For your information, I am enclosing herewith copy of final decree entered on August 2, 1932, in the United States District Court for the Southern District of California. This decree holds that Herbert H. Waxham, a Robbins user, has infringed Claim 1 of United States Letters Patent No. 1,262,860, by the use of a Robbins Incubator.

This is to formally notify you that by your use of Robbins Incubators you are infringing United States Letters Patent No. 1,262,860, owned by Samuel B. Smith of Cleveland, Ohio, and, further, that you may be held liable to Samuel B. Smith aforesaid for future as well as past infringement of the patent.

If you do not fully understand your responsibility in this matter, my suggestion is that you consult a patent lawyer.

In the event that you desire any further information concerning this infringement matter, address your correspond-
[fol. 314] ence to Samuel B. Smith or the writer at the office of The Smith Incubator Company, 3108 West 121st Street, Cleveland, Ohio.

Very truly yours, George C. McConnaughey, Attorney for Samuel B. Smith.

gcm-ecc.
enc.
Registered Letter.
(Return receipt attached.)

[fol. 315] PLAINTIFF'S EXHIBIT No. 31

April 11, 1934.

Hall Bros., Wallingford, Conn.

GENTLEMEN:

On August 10, 1932, we notified you that the use of Robbins Incubators had been held to infringe the Smith Patent No. 1,262,860 by the District Court in the Southern District of California in the case pending against Herbert H. Waxham, a Robbins user. You are now advised that the Circuit Court of Appeals of the Ninth Circuit has on Monday, April 9, 1934, affirmed the decision of the Master and the District Court in the case.

We are advised that you are and have been for some time using one or more Robbins Incubators. Use of these incubators constitute an infringement of the Smith Patent, and you are hereby notified to discontinue at once and to account for damages to S. B. Smith, the owner of the patent.

Unless prompt action is taken by you and a satisfactory settlement made, suit will be brought against you for the infringement of the patent and application made for injunction preventing your further use of the Robbins Incubators.

Very truly yours, George C. McConnaughey, Attorney for Samuel B. Smith.

gcm-eab.
Registered Letter.
(Return receipt attached.)

(Here follows 1 photo, side folio 316)

PLAINTIFF'S EXHIBIT No. 32 316

[fols. 317-354] Defendant's Exhibit "F" omitted in printing as it appears at side folio 1010 of the James record.

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[fol. 355] DEFENDANTS' EXHIBIT H

IN THE DISTRICT COURT OF THE UNITED STATES FOR THE DISTRICT OF NEW JERSEY

In Equity. No. 2026

BUCKEYE INCUBATOR COMPANY and SAMUEL B. SMITH

vs.

WILLIAM F. HILLPOT

Final Decree

(Filed September 3, 1927)

This cause came on to be further heard at the April Term of this Court, upon the pleadings and proofs, and was argued by counsel for the respective parties, and thereupon, upon consideration thereof, it was

Ordered, Adjudged and Decreed, First, that defendant has not infringed plaintiff Smith's Patent No. 1,262,860. Second, that said patent does not disclose a successful method of operation and, consequently, method claims 1 and 2 thereof are invalid and void. Third, that the bill of complaint be dismissed. Fourth, that plaintiffs have not infringed defendant's claim 8 of Hillpot Patent No. 1,489,597. Fifth, that plaintiffs have not infringed defendant's claims 1 or 2 of Hillpot Patent No. 1,545,425. Sixth, that [fol. 356] defendant's counterclaim be dismissed. Seventh, that the parties shall pay their respective costs.

J. L. Bodine, U. S. D. J.

Approved as to form: ——, Counsel for Plaintiffs.
Arthur E. Paige, Counsel for Defendant.

UNITED STATES OF AMERICA,
Eastern District of Pennsylvania,
Third Judicial Circuit, set:

I, Wm. P. Rowland, Clerk of the United States Circuit Court of Appeals for the Third Circuit, do hereby certify

the foregoing to be a true and faithful copy of the final decree of the District Court of the United States for the District of New Jersey, as the same appears in the transcript of record on appeals from the said Court in the case of Buckeye Incubator Company and Samuel B. Smith, vs. William F. Hillpot, No. 2026 in Equity (C. C. A. Nos. 3697 and 3698), on file, and now remaining among the records of the said Court, in my office.

In Testimony Whereof, I have hereunto subscribed my name and affixed the seal of the said Court, at Philadelphia, this 20th day of June, in the year of our Lord one thousand nine hundred and thirty-five and of the Independence of the United States the one hundred and fifty-ninth.

Wm. P. Rowland, Clerk of the U. S. Circuit Court of Appeals, Third Circuit. (Seal.)

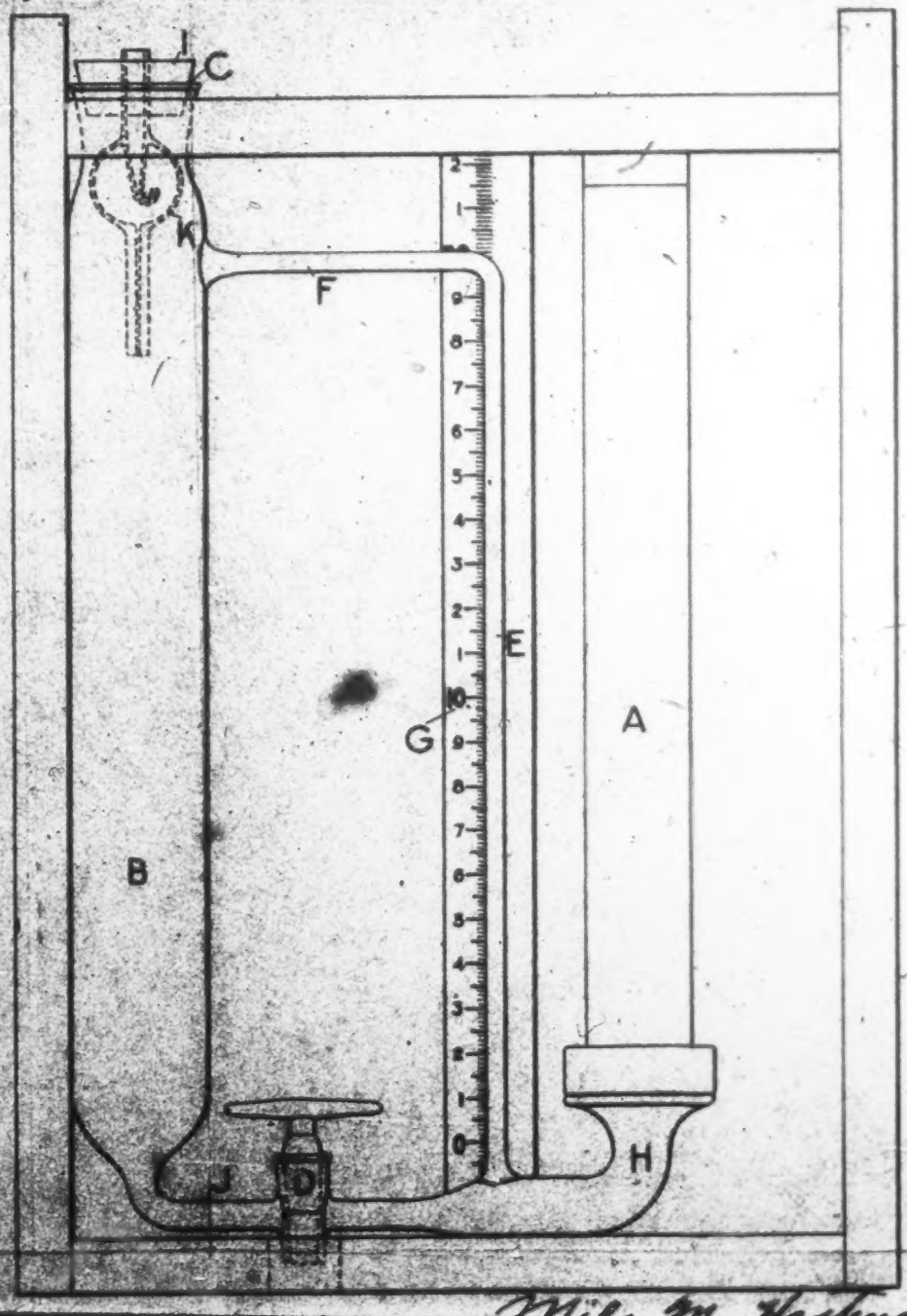
(Here follows 1 specification, side folios 357, 358, 359 and 360)

M. M. HASTINGS.

APPARATUS FOR MEASURING THE HUMIDITY IN OR DETERMINING THE EVAPORATING POWER OF THE AIR.

APPLICATION FILED SEPT. 28, 1908.

911,875. Patented Feb. 9, 1909.




Witnesses

# UNITED STATES PATENT OFFICE.

MILO M. HASTINGS, OF WASHINGTON, DISTRICT OF COLUMBIA.

## APPARATUS FOR MEASURING THE HUMIDITY IN OR DETERMINING THE EVAPORATING POWER OF THE AIR.

No. 911,875. Specification of Letters Patent. Patented Feb. 9, 1909.

Application filed September 28, 1908. Serial No. 455,109.

(DEDICATED TO THE PUBLIC.)

*To all whom it may concern:*

Be it known that I, MILO M. HASTINGS, an employee of the Department of Agriculture, and a legal resident of the State of Kansas, at present residing in the city of Washington, District of Columbia, whose post-office address is No. 1733 Twentieth street northwest, in said city and District, have invented a new and useful Apparatus for Measuring the Humidity in or Determining the Evaporating Power of the Air.

This application is made under the act of March 3, 1883, chapter 143 (22 Stat., 625), and the invention herein described and claimed may be used by the Government of the United States or any of its officers or employees in the prosecution of work for the Government or by any person in the United States, without payment to me of any royalty thereon.

This invention relates to atmospheric humidity and is adapted for use in measuring the humidity in, or determining the evaporating power of, the air.

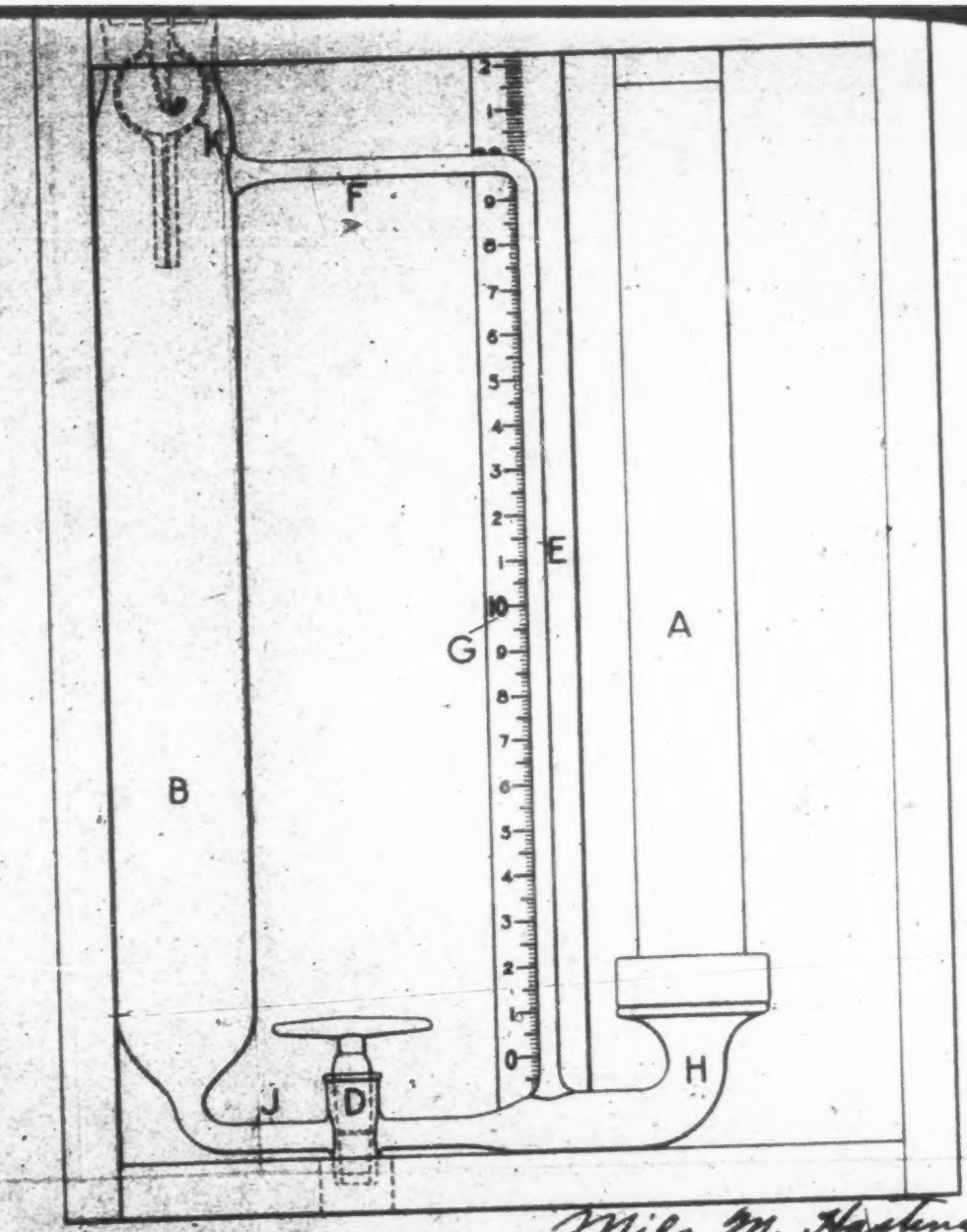
The object of the invention is to produce a humidity measuring instrument that will meet the needs of the cold storage industry.

Heretofore, no satisfactory device has been perfected for determining the humidity in the air under cold storage conditions and as a result, it frequently occurs that operators of cold storage plants sustain much loss due to wrong conditions of atmospheric moisture. When the air is too dry in cold storage rooms it is deleterious to various products, and when the air is too moist in such rooms, it is likewise injurious to certain commodities. Therefore, it is the purpose of my invention to afford a means for detecting and measuring atmospheric humidity, in order that such conditions may be properly controlled.

tom end by means of a rubber tube to a glass tube H. The said glass tube H connects with a stop-cock D and is attached near its center to the glass tube E which runs perpendicularly with the reservoir, C, and is connected with a horizontal glass tube, F, of similar diameter to the tube E, at one end of the glass tube, B, of the reservoir, which serves as a reservoir for containing the fluid used in practicing my invention. The reservoir B has an opening at the top, C, so as to permit the fluid to be poured therein. This opening, C, is closed by means of a check bulb K fitting into a rubber tube, L, and when placed in the opening, C, it allows freedom of air pressure within, but permitting leakage of the liquid contained in the reservoir, B. The reservoir, or large glass tube, B, at its lower end forms a part of and has opening into a smaller glass tube, J, and the tube, J, is connected to the stop-cock, D. The purpose of the stop-cock D is to check the flow of liquid from the glass tube J to the glass tube E, the two tubes being intersected by the stop-cock D, as shown in the accompanying drawing.

G is the scale placed behind the glass tube E and its use is to facilitate the reading of any change in the volume of liquid contained in the said tube, though the glass tube E may be graduated, so as to record any change in the liquid.

In operating the said apparatus, I fill the reservoir B approximately three fourths full with a desired strength of [illegible] acid or other solution, and then [illegible] the device back and forth so as to cause the liquid to run into and completely fill the porcelain tube A and the glass tube H. When this action is accomplished the stop-cock D is closed and [illegible]




Milo M Hastings
INVENTOR

WITNESSES
Harry Goding
Charles W. Boyd

per Geo McCabe
ATTORNEY

*To all whom it may concern:*

Be it known that I, MILO M. HARRISON, an employee of the Department of Agriculture, and a legal resident of the State of Kansas, at present residing in the city of Washington, District of Columbia, whose post-office address is No. 1733 Twentieth street northwest, in said city and District, have invented a new and useful Apparatus for Measuring the Humidity in or Determining the Evaporating Power of the Air.

This application is made under the act of March 3, 1883, chapter 143 (22 Stat., 625), and the invention herein described and claimed may be used by the Government of the United States or any of its officers or employees in the prosecution of work for the Government or by any person in the United States, without payment to me of any royalty thereon.

This invention relates to atmospheric humidity and is adapted for use in measuring the humidity in, or determining the evaporating power of, the air.

The object of the invention is to produce a humidity measuring instrument that will meet the needs of the cold storage industry.

Heretofore, no satisfactory device has been perfected for determining the humidity in the air under cold storage conditions and as a result, it frequently occurs that operators of cold storage plants sustain much loss due to wrong conditions of atmospheric moisture. When the air is too dry in cold storage rooms it is deleterious to various products, and when the air is too moist in such rooms, it is likewise injurious to certain commodities. Therefore, it is the purpose of my invention to afford a means for detecting and observing atmospheric humidity, in order that such conditions may be properly remedied, when necessary, so as to avoid any harmful and injurious effects to the products in cold storage.

The nature, characteristics and scope of the invention will be more readily understood from the following description taken in connection with the accompanying drawing, forming a part hereof, wherein is shown a front perspective view of the apparatus.

Referring to the drawing, A represents a porous porcelain tube, having an opening at the bottom thereof, and is attached at its bot-

negative movement of the liquid in the reading tube E, thereby indicating that more moisture should be supplied the room. If the humidity of the room is greater than desired, the vapor pressure of the moisture in the air will be greater than the vapor pressure of the liquid in the instrument, and moisture will be absorbed from the air by the liquid in the porcelain tube A. This will cause a positive movement of the liquid in the reading tube E toward the reservoir or large glass tube B, thereby indicating that less moisture should be supplied to the room. If the room has the desired degree of moisture, neither evaporation nor absorption takes place, and the liquid in the tube E remains stationary.

I do not confine myself to the sole use of aqueous sulfuric acid in practicing my invention, but any other aqueous solution possessing similar properties may be used in obtaining the same desired results.

Having thus described my invention, I claim:

1. An apparatus having a porcelain tube A, glass tubes H, J, E, and F, of small circumference, and a glass tube, B, of large circumference with an opening at its top for receiving fluid and a stopper for closing said opening, the glass tubes F and E being arranged so as to connect the glass tube B with the glass tube H, thereby permitting the flow of fluid from one tube to the other, substantially as described.

2. An apparatus having a porcelain tube A, glass tubes H, J, E, and F, of small circumference, and a glass tube, B, of large circumference with an opening at its top for receiving fluid and a stopper for closing said opening, the glass tubes F and E being arranged so as to connect the glass tube, B, with the glass tube, H, thereby permitting the flow of fluid from one tube to the other, and a stop-cock to regulate such flow, substantially as specified.

3. An apparatus having a porcelain tube A, glass tubes H, J, E, and F, of small circumference, and a glass tube, B, of large circumference with an opening at its top for receiving fluid and a stopper for closing said opening, a stop-cock intersecting the glass tubes J and H, and the glass tube J being arranged so as to connect the glass tube B with the tube H, thereby permitting the flow of fluid from one tube to the other, substantially as specified.

4. An apparatus having a porcelain tube A, glass tubes H, J, E, and F, of small circumference, and a glass tube, B, of large circumference with an opening at its top for receiving fluid and a stopper for closing said opening, the tubes F and E being arranged so as to connect the tube, B, with the tube, H, thereby permitting the flow of fluid from one tube to the other, and the tubes containing fluid for determining the evaporating power of air, and a scale plate provided with graduations for indicating variations in the volume of said fluid whereby the humidity of the air may be determined, substantially as specified.

In testimony whereof I affix my signature in the presence of two subscribed witnesses.

MILO M. HASTINGS.

Witnesses:
ROB R. SLOCUM,
G. ARTHUR BELL.

[fol. 361] In United States District Court, District of Connecticut

In Equity. No. 2,369

Samuel B. Smith

v.

A. B. Hall and L. C. Hall, d. b. a. Hall Brothers

Messrs. Rockwell & Bartholow, of New Haven, Conn., and Arthur L. Ely, Esq., of Cleveland, Ohio, for Plaintiff.
Messrs. Billings & Harris, of Wallingford, Conn., and Arthur E. Paige, Esq., of Philadelphia, Pa., for Defendants.

Opinion

Hincks, D. J.:

This suit, charging infringement of plaintiff's patent, came before me upon the plaintiff's motion for a preliminary injunction which, after hearing and upon a "findings of fact" dated February 27, 1935, was granted. An interlocutory decree and order was entered upon the same date.

On June 17th the suit came on for trial upon the merits, the defendants appearing and interposing the defenses of invalidity and non-infringement. Having fully heard the parties, pursuant to Equity Rule 70½, I now state as follows my

[fol. 362] Findings of Fact

1. United States Patent No. 1,262,860, issued on April 16, 1918, to The Buckeye Incubator Company, assignee, upon the application of S. B. Smith, filed October 26, 1916. On April 29, 1927, said The Buckeye Incubator Company, being then the owner of said patent, did sell and assign the same to Samuel B. Smith, the plaintiff herein, who has ever since been the sole and exclusive owner of said patent.

2. The patent in suit is stated to be an improved apparatus and method for the incubation of eggs in large quantities. Claim 1 thereof, which alone is in issue, is as follows:

"1. The method of hatching a plurality of eggs by arranging them at different levels in a closed chamber

having restricted openings of sufficient capacity for the escape of foul air without undue loss of moisture and applying a current of heated air, said current being created by means other than variations of temperature and of sufficient velocity to circulate, diffuse and maintain the air throughout the chamber at substantially the same temperature, whereby the air will be vitalized, the moisture conserved and the units of heat will be carried from the eggs in the more advanced stage of incubation to those in a less advanced stage for the purpose specified."

3. The patent also includes article claims for an in- [fol. 363] cubator, and in the specifications the descriptions of the article and method are commingled. They disclose a large chamber wherein thousands of eggs in various stages of incubation are placed in trays in tiers and subjected to a forced circulation of air "adapted preferably to maintain all eggs at temperatures between 100° and 105° Fahrenheit approximately." The specifications contemplate that at intervals of three days fresh eggs shall be inserted at the top tier in the chamber, and that at the same interval the eggs previously set shall successively be moved downward in the tiers, so that the eggs in the latest stage of incubation shall be at the bottom levels where the actual hatching occurs and the chick emerges. Excerpts from the specifications upon which defendants rely in urging a narrow construction of Claim 1 are as follows:

"The temperature of circulating air should be such as will prevent the *eggs in the early stage of incubation from falling below* 100° and the speed or velocity of the circulating air should be such as to carry the heat away from the eggs *in the later stage* of incubation and thereby hold the temperature of those eggs at 105° or slightly below that. It is manifest that the temperature will remain practically the same throughout the column of eggs, but the air is impelled with sufficient velocity to carry the heat away from the eggs which happen to be *in the advanced stage* of incubation."

"These trays are provided with open mesh bottoms 14 upon which the smaller ends of the eggs rest in close and solid formation, and each tray of eggs occupies the upper [fol. 364] rack 9 for the first three days, and is then transferred to a place in the upper end of the tilting rack 10

During the next fifteen days the trays in the tilting rack are shifted from higher to lower planes therein and tilted at frequent intervals to stand in oppositely-inclined positions. The tilting of the eggs is preferably arranged to put the eggs substantially on their sides. When the eggs *in the lower-most trays* in the tilting racks 10 are about ready to hatch each tray is transferred to the stationary rack 12 where the chicks may be removed as occasion requires."

"As explained later the *trays near the bottom* are preferably arranged so that the air is forced to pass between the eggs in each tray thereby cooling or holding the temperature of those eggs down."

"And it will be also noted that the vertical spaces 27 between the adjacent tilting racks 10 are closed *at their lower ends* by flexible strips of fabric which are attached to and extend upward at each side of each rack so as to compel the air to circulate through the mesh bottom and around and about each egg as heretofore referred to, and as *the eggs further advanced in incubation are contained in these lower trays* and as the danger is that the temperature will rise in these eggs to a point injurious to incubation the improved method disclosed herein permits the circulating air to act as a medium to prevent the over-heating at this stage of incubation and this is accomplished by promoting [fol. 365] an induced draft *within the lower trays*. It is obvious that the fans can be so arranged and can be operated at such speed as to cause the hot air to circulate fast enough to keep the temperature throughout the chamber between the limits of 100° and 105°."

"It, therefore, appears that the improved apparatus and method contemplates the application of hot air circulating in a column with such speed as to keep the temperature substantially uniform and so arranging the eggs that the fresh eggs are placed at one point in the column of air and held in a horizontal plane until they reach a predetermined stage of incubation and then put at a different point in the same column of air and kept in planes inclined to the horizontal and thereafter placed at such a point in the column of air that the forced draft of air acts to hold the eggs at a uniform temperature, and to prevent them from becoming over-heated and thereafter placing the eggs into final positions for the hatching operation."

4. Up to the time the plaintiff's patent issued and thereafter substantially until 1923, it was generally believed that an air temperature of 100° F. within the incubator would maintain the eggs in the early stages of incubation at a temperature of 100° F., and the smaller, or "Buckeye," incubators first put out under the patent in suit in 1917 were generally operated at that temperature. After the patent issued, however, it was found that the temperature of eggs in the early stage of incubation was lower than theretofore [fol. 366] believed. From evidence that an air temperature of 100¾° F. would maintain such eggs at a temperature of 100° F., I conclude that the early "Buckeye" incubators, operated at an air temperature of 100° F., must have maintained the early eggs at a temperature between 99° and 100°.

However, the Buckeye incubators with their comparatively low humidity, would have operated successfully at a slightly higher temperature, raising the eggs in the early stage of incubation to a temperature of 100° F., thus bringing them within the range stated in the patent specifications. For the larger, or "Smith," incubators, first put out under the patent in suit in 1923, the plaintiff recommended an operating air temperature of 99° F., and in 1928 the plaintiff found further efficiency resulted from operation at a substantially higher humidity provided the air temperature was carefully controlled so as not to exceed 99° F.

5. The plaintiff and his predecessor in title have put to commercial use with very substantial success the method of Claim 1 of the patent in suit continuously since 1917.

6. The defendants contend that the plaintiff, notwithstanding the issue of the patent in suit, was not the original and first inventor of the discovery disclosed in said patent, but that the same had been previously known by one Hastings and used by him on a farm in Brooklyn, N. Y., operated by one Walter R. Davis. As to this use, the gist of the evidence offered follows and is further amplified in my comments below.

[fol. 367] The witness Hastings testified in substance as follows: That in the early months of 1911 he was employed by Walter R. Davis to build and operate an incubator on Mr. Davis' poultry farm in Brooklyn, N. Y.; that he then upon constructed an incubator in the cellar of Mr. Da[illegible]

farm house wherein several Cyphers incubators were already installed and in operation. The method of hatching used in this incubator was to insert the eggs in superimposed layers in a plurality of trays, one above the other, in a chamber wherein the air was circulated by a fan, the temperature being under thermostatic control. A gas heater outside the chamber was available to heat the air therein and cracks around the door admitted a certain amount of fresh air. This method of incubation was used under Hastings' supervision continuously beginning in March, 1911, for two months, a fresh lot of eggs being inserted twice a week during that period. Within this period a test was made to compare the Hastings incubator with the Cyphers machine. On the eggs used it was found that the Hastings incubator had about the same comparative efficiency as the Cyphers machine, each type hatching 59% of the eggs used, at least according to the best recollection of the witness. The Hastings incubator, as constructed for Mr. Davis, had a capacity of 6,000 eggs. However, during the period covered by Hastings' testimony, not over 2,000 eggs were contained therein at any one time. Although the incubator was wholly Hastings' invention, his arrangement with his employer, Mr. Davis, was such that Mr. Davis owned the machine and was licensed to operate the same even after Hastings left his employ in the latter part of May, 1911. Mr. Davis, by [fol. 368] public advertisement copyrighted and published in 1911, invited the public to visit his farm. However, the general public was not admitted to inspect the Hastings incubator, at least while Hastings was in Davis' employ, because Hastings wished it kept secret on account of a pending application for a patent which he filed while in Davis' employ. But, although the general public was excluded from an inspection of the Hastings incubator, Hastings' friends and Mr. Davis' were allowed to see the same.

Mr. Walter B. Davis testified as follows: That he employed Hastings upon the recommendation of the editor of the "Poultry Digest," who represented that Hastings could build an incubator which would supplant the Cyphers [illegible]. The Hastings incubator was made of wood and cork [illegible] contained a thermostatic control for artificial heat [illegible] was furnished by a gas burner outside the chamber. [illegible] circulated air so that the temperature as registered

on thermometers on the top, bottom and center of the chamber was uniform. While Hastings was there and thereafter the incubator was operated at a temperature of 102½° F. Eggs in trays, one above the other, were inserted at semi-weekly intervals of unequal amounts. He continued to use the incubator after Hastings left and had it in his cellar until December, 1913, when, because of business reverses, he gave up the farm and destroyed the Hastings incubator because it was not portable. A great many of his guests saw the incubator when in operation.

Mrs. Davis, the wife of Walter B. Davis, also testified that she saw the Hastings incubator in operation in the farm [fol. 369] house cellar. She recalled that the incubator was used after Hastings left under the management of one Miller. The remainder of her testimony appeared to be largely hearsay.

7. On trial the defendant offered in evidence the patent application of Milo Hastings dated April 15, 1911, Serial No. 624,885, filed May 3, 1911, together with the file wrapper pertaining to the same, showing that the application was rejected by decision upon a Patent Office appeal thereon dated March 11, 1913. On trial it was conceded that said patent application was thereupon abandoned and on that account plaintiff objected to its admission in evidence as being wholly immaterial to all issues of the case. At the trial ruling was reserved. And now, upon authority of U. S. Blind Stitch Corp. v. Reliable Machine Works, Inc., 65 Fed. (2nd) 327, and The Corn Planter Patent, 23 Wall. 181, at page 211, the objection is overruled and, subject to plaintiff's exception, the abandoned application with the accompanying file wrapper is received in evidence as Exhibit "F," not, however, as showing in itself an anticipation of the patent in suit, but only in so far as it tends to corroborate other evidence that the discovery disclosed in the patent in suit was previously known and used by Hastings, and that Smith was not the original and first inventor thereof.

8. Upon all the evidence I find that the defendants have failed to establish by clear and convincing proof, still less beyond a reasonable doubt, that Hastings in fact knew and used on the Davis farm in 1911 the method of incubation disclosed in Claim 1 of the patent in suit, or that the method [fol. 370] which Hastings then used was successful, or that

said use was anything more than a casual or forgotten use, or that said use made any contribution to the art.

With respect to the conclusions of fact just stated, it will be observed at the outset that the only documentary evidence to corroborate Hastings' so-called prior use is his abandoned and rejected patent application and its file wrapper. The application, made while in Davis' employ during the progress of the so-called prior use, contains not even a suggestion of the presence of staged incubation. And the earliest mention of staged incubation contained in the file wrapper is in a written argument of counsel dated May 24, 1912,—substantially a year after Hastings' employment by Davis had terminated. Thus, at most, the only documentary evidence supporting a prior use of the method of staged incubation was substantially subsequent to the date of its alleged reduction to practice. That Hastings in 1912 knew of staged incubation is slight evidence, if any, that he practiced it in 1911.

Davis and his wife, to be sure, testified that Hastings practiced staged incubation, but Davis had a busy linotype establishment running in New York day and night; his wife was his bookkeeper. The record does not show that either of them actually saw the eggs set in staged incubation. Their belief in the presence of staged incubation obviously is attributable to the fact that they received bills for frequent shipments of setting eggs. They now say they supposed these eggs were set in the Hastings incubator twice a week, as received. But so far as their actual knowledge is concerned, it well may have been that the eggs received for [fol. 371] setting were distributed between the Hastings incubator and the several Cyphers incubators, in use near by, wholly without staged incubation. Thus, on analysis, the practice of staged incubation in connection with this alleged prior use rests upon the verbal testimony of Hastings alone.

Moreover, the dearth of evidence is not without significance. It is said that the process was practiced under the supervision of one Miller after Hastings had left Davis' employ. But Miller was not produced as a witness, nor his absence accounted for. The evidence is that Orvis, who brought Hastings and Davis together, also knew of the claimed use. Orvis likewise was neither present nor accounted for. Davis testified that under his orders, Hastings' incubator was destroyed by his nephew. But his

nephew was neither present nor accounted for. Davis testified that "this incubator and the method of operation" were seen by his guests, "many hundreds—probably a couple of thousand." But of these thousands, not one was brought to testify. Moreover, Davis throughout was by occupation a printer and linotypist in New York, who ran this farm in Brooklyn as a side line. (I infer that on the farm he must have maintained some kind of a public establishment, from his testimony that he had four dining rooms, and sometimes had to slaughter 200 broilers for the guests on a single Sunday.) He says that in December, 1913, he surrendered the lease of the farm because of unfortunate investments in aviation, and had to destroy the Hastings incubator because it was non-portable. Obviously, the testimony of such a layman with respect to the technicalities [fol. 372] of hatching is of less weight than that of a professional poultry-man. Even so, it would have been natural even for a layman engaging in the poultry business as a side line on such a scale to have kept records relating to his hatchings. But such records were neither offered nor accounted for, nor was any documentary evidence offered to corroborate the unusual circumstances explaining the utter destruction of what the defendants offer as the only prior use of Smith's invention.

As for Hastings' testimony, it appeared to me candid. Nevertheless, he admitted that he subsequently, in the course of promotion of a subsequent enterprise, represented that the Davis incubator had a 15,000 capacity instead of 6,000 which was the fact. He admitted freely that, believing himself "to be the original inventor of a basic principle which another man later develops and attempts to monopolize", he naturally felt "some element of resentment that he did not share in such return." Moreover, in the file wrapper of his abandoned application it was stated by his attorney in a writing dated May 24, 1912, that Hastings had made "a painstaking and very costly series of experiments" whereby he had discovered that a "forced circulation must be such as to overcome the counteracting influence of the eggs upon the air when said eggs are in *the different stages of incubation.*" But in his cross-examination he admitted that in a previous case he had testified that he did not remember "the details of the time we set these eggs because it was of no importance to the pro-

ciple of incubation, but merely a matter of convenience in handling the eggs and taking off the chicks." And again, [fol. 373] that in the summer of 1918, when in Ohio, while employed by one Hoppel, he "tried out a method of hatching there very much more like the Smith-Buckeye device than I had used in the past."

But even if staged incubation was in fact used at this time and place, it does not follow that the entire method of claim 1 was then successfully reduced to practice. Hastings' testimony, upon which the defendants rely to prove a successful reduction to practice, is as follows:

"I mean we made a comparative test of dividing lots of eggs and putting some in Cyphers' machine and some in the machine I built. My memory is that the machines hatched about equally well and that the hatch was about 59%. I wouldn't be sure of it exactly."

If this was one of his "costly" experiments referred to in his file wrapper, it is strange that no documentary record has come down to us of this or any other test. But passing that point, the record is wholly silent as to the conditions of the test. For aught that appears the test may have been made as soon as the Hastings incubator was completed and before staged incubation began, if indeed it ever was practiced. At the time of the test, the eggs in the Hastings incubator may have been all of one stage or of a number no greater than those used in the Cyphers incubator, and the "test" may have been no more than an application of the old convection method of artificial incubation. For the Hastings incubator, he says, had a capacity of 6,000 but was [fol. 374] never operated with over 2,000. For all I know 2,000 eggs set in a chamber three times too large for them and supplied with some heat and some natural ventilation, even without a fan, might have produced as good a hatch as Hastings got. And if Hastings, as the drawing of his abandoned patent application discloses, had his fan outside a fabric enclosure of the egg chamber, perhaps the only mechanical circulation of air was around the outside of the fabric enclosure; inside the fabric it well may be that the only circulation of air was the product of convection as in the old-style incubators, so that the incubation was proceeding under the old process rather than the new.

I am thus left in doubt as to whether Hastings on the Davis farm in the spring of 1911 did what it is said he did; if so, whether he used the method of Claim 1 of the patent in suit; and if so, whether his use thereof was a successful use within the rule of Corona Cord Tire Co. v. Dovan, 276 U. S. 358.

9. The complaint herein was filed on July 18, 1934. Within the period of six years prior thereto, the defendants, who for twenty-five years have been engaged in the operation of a commercial hatchery, purchased and used a number of Robbins 23 incubators, and also three Robbins 17 incubators. These incubators were the same as those which were held to be an infringement of Claim 1 of this same patent in the case of Smith v. Waxham, 294 U. S. 20. In these machines, the hatching, that is to say, the actual pipping of the shell, takes place in the same chamber in which the entire incubation is accomplished. The [fol. 375] defendants also during this period purchased and used two Robbins No. 62 multi-hatchers each consisting of two No. 10 "hatchers", a "hatcher" comprising a separate compartment designed to contain the eggs for the last two or three days of incubation only. Thereafter the defendants used the Robbins 23 machines for the first eighteen or nineteen days of incubation, whereupon the eggs were transferred to the No. 10 hatchers in which the incubation was completed and the chicks emerged. In 1933 the defendants further purchased four Robbins Model 62 incubators, each containing two incubating cabinets of 26,000 egg capacity, and one No. 10 hatcher. In 1934 they purchased a Robbins Model 125, comprising two of the model 62 incubators just above described. The method of incubating in all these Robbins machines was precisely the same as that used in Robbins models 17 and 23, except that in the other models the eggs were removed from the incubating chamber the eighteenth or nineteenth day to a separate hatcher wherein the incubation was completed and the chicks emerged. In the operation of this apparatus the defendants maintained an air temperature in the incubators at 99° F., and a humidity of 35% to 45%; in the separate hatchers an air temperature of 98° F., and a humidity of 65% to 80%. Since the fall of 1930 the defendants have wholly used separate hatchers for the eggs for the last three days of incubation. The device of a separate

hatcher, permitting of different temperature and humidity for the last three days of incubation, according to the defendants' testimony, increased the percentage of their hatches from 2% to 5%, enabling them to attain an ef- [fol. 376] ficiency of 85% to 90%.

10. The method used by the defendants in the use of all of the Robbins machines above specified involved the arrangement of the eggs at different levels in staged incubation in a closed chamber, having restricted openings of sufficient capacity for the escape of foul air without undue loss of moisture; the application to the eggs of heated air in a current created by means other than variation of temperature; the current of air being of sufficient velocity to circulate, diffuse and maintain the air throughout the chamber at substantially the same temperature, whereby the air is vitalized, moisture conserved, and the units of heating carried from the eggs in the more advanced stage to those in the less advanced.

## Conclusions of Law

### I

Claim 1 is valid notwithstanding the defendants' contention that its subject-matter was previously known and used by others in this country within the meaning of R. S. 4886.

The only prior use which the defendants sought to prove was the so-called Hastings use on the Davis farm. This is subject-matter which, I am told, was not before the Supreme Court when it held the patent valid and infringed. Smith v. Snow, 294 U. S. 1; Waxham v. Smith, id. 20. The evidence set forth above is insufficient to establish this use with the certainty required by the well-established rule. Barbed Wire Patent Case, 143 U. S. 275; Deering v. Win- [fol. 377] ona, 155 U. S. 286; General Motors Corp. v. Leer Auto Supply Co., 60 Fed. (2nd) 904. The mere fact that the witnesses on the stand have an appearance of candor is not sufficient. To be sure, in the case of Corona Co. v. Dovan Corp., supra, it was said (although the decision did not rest upon the dictum) that a prior use might be established by a single witness, "in connection with other circumstances". But it was there pointed out that if the prior use were "an isolated instance", unconnected with a consistent history of endeavor, it "might reasonably give

rise" to a question. And in U. S. Blind Stitch Corp. v. Reliable Machine Works, supra, although the rule was held to be satisfied, the report shows neither the quality nor volume of evidence there adduced to satisfy the rule.

Moreover, on the record submitted in this case, if the method of Claim 1 was in fact used at all, for aught that appears it was promptly forgotten, only to be recalled in connection with the litigation that followed the Smith patent. Such a use, contributing nothing to the store of human knowledge, does not negative novelty. Gaylor v. Wilder, 10 Howard, 477; Diamond Patent Co. v. S. E. Carr Co., 217 Fed. 400. Nor do the defendants negative novelty by proof of "only a casual use, abandoned thereafter and never entering into the art until after the patent in suit was applied for",—in this case an interval of over five years. Concrete Mixing Co. v. Powers-Kennedy Contracting Corp., 27 Fed. (2nd) 688.

II

Claim 1 is valid notwithstanding the defendants' contention that its subject-matter was "in public use and on sale [fol. 378] in this country for more than two years prior" to the plaintiff's application for the patent in suit within the meaning of R. S. 4886.

For if the subject-matter, as I have held, was not known and used by others in this country before the plaintiff's discovery, a fortiori, it was not in public use and on sale for more than two years prior to the application for the patent in suit.

III

Claim 1 is valid notwithstanding the defendants' contention that it "does not disclose a successful method of operation."

Defendants' contention in this respect is based upon the fact, conceded by the plaintiff, that, especially in incubators of the larger dimensions, more successful operation can be obtained by maintaining the eggs in the endothermic stage at a temperature somewhat below 100° F. than at the higher temperatures stated in the specifications. But the claim in question, being entitled to a liberal construction, Smith v. Snow, supra, cannot be restricted by so treating the descriptive phrases of the specifications as downright limi-

tions. Moreover, the evidence shows that not only were the plaintiff's earlier and smaller incubators operable even within the temperature ranges of the specifications; they were commercially successful. And the defendants' own evidence, upon which they rely as showing a prior use by Hastings, is to the effect that Hastings operated successfully at a temperature of 102½° F.

[fol. 379] IV

In connection with their use of Robbins Models 17 and 23, the defendants infringed Claim 1 of the patent in suit.

If claim 1 be valid, it was conceded on brief that these models infringed. Indeed, Waxham v. Smith, supra, has put that conclusion beyond dispute.

V

The defendants' use of the Robbins models other than Nos. 17 and 23 likewise constituted an infringement of Claim 1.

The force of this conclusion the defendants seek to avoid by the contention that the final clause of Claim 1, in which it is said: "The units of heat will be carried from the eggs in the more advanced stage of incubation to those in a less advanced stage", when construed in the light of the specifications, contemplates that the eggs shall be completely incubated in the chamber where the process began, because the words "more advanced stage of incubation" are used in a superlative sense to mean "the most advanced stage."

I am unable to adopt such a stilted construction which would so narrow the disclosure of the claim as to deprive it of all value. In Smith v. Snow, supra, it was said of this very patent and claim: "The character of the patent and its commercial and practical success are such as to entitle the inventor to broad claims and to a liberal construction of those which he has made." Since the Hastings' so-called [fol. 380] prior use has not been satisfactorily proven, there is nothing else in the record here which could possibly justify me in giving the claim in suit a narrower construction than that which the Supreme Court has already accorded to it. And so, construing this element of the claim as requiring only the presence of an air-relation between eggs in the less advanced (endothermic) stage and those in the

more advanced (exothermic) stage, it follows that infringement is not avoided by removing the eggs for the final three days of incubation into a separate hatching chamber. As was said in Waxham v. Smith, supra, "Petitioner does not avoid infringement of respondent's method of patent merely by employing it in a machine of different construction than respondent's, whether more or less efficient." The fact remains that the defendants in their use of the Robbins apparatus have utilized all the essential elements disclosed in Claim 1.

The plaintiff may have a decree, with costs, adjudging Claim 1 of the patent in suit to be valid and infringed, and a reference for an accounting of all profits enjoyed by the defendants and an ascertainment of all damages sustained by the plaintiff by reason of the defendants' infringements occurring between July 18, 1928 and April 16, 1935, on which date the patent in suit expired.

New Haven, July 18, 1935.

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[fol. 381] In United States District Court

[Title omitted]

Plaintiff's Exception

Now comes the plaintiff herein, by his attorneys, and files herein his exceptions to the ruling of this Court contained in paragraph 7 of the Findings of Fact filed herein, admitting the Hasting's Abandoned Application File (Exhibit F) in evidence for the purposes set forth in said paragraph or for any purpose.

Rockwell & Bartholow.

New Haven, Connecticut.

[fol. 382] In United States District Court for the District of Connecticut

In Equity. No. 2369

Samuel B. Smith, Plaintiff,

vs.

A. B. Hall and L. C. Hall, d. b. a. Hall Brothers, Defendants

Interlocutory Decree

This cause having come on for hearing and having been heard in open Court upon the testimony and upon briefs filed by the parties, and the Court having filed herein its Findings of Fact and Conclusions of Law, it is hereby

Ordered, Adjudged and Decreed:

1. That the plaintiff, Samuel B. Smith, is the sole and exclusive owner of Smith Patent No. 1,262,860, dated April 16, 1918, and entitled to all recovery for infringement thereof.

2. That Claim 1 of the patent is valid.

3. That the defendants, A. B. Hall and L. C. Hall, doing business as Hall Brothers, at Wallingford, Connecticut, have infringed upon Claim 1 of the patent by the operation of incubators known as Robbins No. 23, Robbins No. 17, Robbins No. 62 and Robbins No. 125.

4. That the preliminary injunction previously issued in this cause was not improvidently granted, and that the supersedeas bond of Twenty-five Thousand Dollars ($25,-[fol. 383] 000.00) filed by defendants shall remain in full force and effect until the termination of any accounting herein in accordance with its terms.

5. That the plaintiff is entitled to an accounting from the defendants of all profits enjoyed by the defendants and all damages sustained by the plaintiff by reason of the defendants' infringements occurring between July 18, 1928, and April 16, 1935, and that this cause be referred to ——— as Special Master of this Court, who is hereby appointed to ascertain and report to this Court a true and

correct account of the extent of the infringement and also the amount of the gains, profits and advantages which the defendants have received from the infringement of Claim 1 and the amount of damages which the plaintiff has sustained by reason thereof, with the usual powers to compel attendance and the producing of papers, books and records of defendants' operations, at such times and places as he shall from time to time direct.

6. That the plaintiff recover his costs in this behalf sustained and have execution therefor.

Dated at New Haven, Connecticut, this 12th day of August, 1935.

(Sgd.) Carroll C. Hincks, U. S. D. J.

Approved as to form: Rockwell & Bartholow, Attorneys for Plaintiff. —— ——, Attorneys for Defendants.

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[fol. 384] In United States District Court

[Title omitted]

Petition for Appeal

To the Honorable Judges of Said District Court:

The above named Defendants feeling themselves aggrieved by the decree made and entered in this cause on the Twelfth day of August, 1935, hereby appeal from said decree to the United States Circuit Court of Appeals for the Second Circuit, for the reasons specified in the Assignment of Errors which is filed herewith, and pray that said appeal be allowed and that citation be issued as provided by law, and that a transcript of the record, proceedings and papers upon which said decree was based, duly authenticated, may be sent to the United States Circuit Court of Appeals for the Second Circuit, sitting at New York, N. Y.

And desiring to supersede the execution of the decree, petitioners here tender bond in such amount as the Court may require for such purpose, and pray that with the allow-
[fol. 385] ance of the appeal a supersedeas be issued.

And your petitioners further pray that the proper order be made regarding the security required of them to perfect their appeal.

Arthur E. Paige, Frank E. Paige, Attorneys for Defendants. Robert P. Billings, Solicitor for Defendants.

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IN UNITED STATES DISTRICT COURT

[Title omitted]

ORDER ALLOWING APPEAL

And now, to wit, this 14th day of August, A. D. 1935, upon consideration of the annexed Petition for Appeal in the above cause, it is, upon motion of Robert P. Billings, Solicitor for petitioners,

[fol. 386] Ordered by the Court that the appeal of said Defendants prayed for therein be and is hereby allowed and shall operate as a supersedeas upon the petitioners filing a bond in the sum of Two Hundred Fifty Dollars, with sufficient securities to be conditioned as required by law.

Carroll Hincks, U. S. D. J.

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IN UNITED STATES DISTRICT COURT

[Title omitted]

ASSIGNMENT OF ERRORS

Now come the Defendants and present with the accompanying Petition for Appeal from the Decree entered in the above entitled cause on August 12, 1935, the following assignment of errors:

1. The Court erred in its Findings of Fact 4 that Buckeye incubators were operated *"under the patent in suit in* [fol. 387] 1917" "at an *air* temperature of 100° F." The patent in suit was not in fact issued until April 16, 1918, and specifies that "The temperature of circulating air

should be such as will prevent the *eggs* in the early stage of incubation from falling below 100°." The evidence of record, testimony of Plaintiff's witness Taggart, (Rec. p. 56), is that an air temperature of 100½ to 100¾° F. would be necessary to fulfill that condition of operation.

2. The Court erred in holding in its Findings of Fact 4 that the Buckeye incubators "would have operated successfully at a slightly higher temperature, raising the eggs in the early stage of incubation to a temperature of 100° F." The testimony of Plaintiff's witness Taggert (Rec. p. 58) is that an air temperature of even 99¼° F. was too hot and destructive of life in the eggs.

3. The Court erred in its Findings of Fact 4 in finding as relevant to the questions at issue the assumption that the Buckeye incubators would have operated successfully at a higher air temperature "raising the eggs in the early stage of incubation to a temperature of 100° F., thus bringing them within the range stated in the patent specifications." That finding is inconsistent with the testimony of Plaintiff's witness Taggert.

4. The Court erred in holding in its Findings of Fact 5 that the "plaintiff and his predecessor in title have put to commercial use with very substantial success the method of Claim 1 of the patent in suit continuously since 1917." [fol. 388] The testimony of Plaintiff's witness Taggert (Rec. p. 57) is that the method of the patent in suit was never in fact effected but the method which was a commercial success was essentially different from the method specified in the patent in suit.

5. The court erred in its Findings of Fact 6 in the finding that the testimony of Defendants' witness Mrs. Davis concerning the Hastings incubator in operation at the farm of her husband, Walter B. Davis, "appeared to be largely hearsay". In answer to a question of the Court, Mrs. Davis stated, on Rec. p. 113, that she was testifying from what she personally observed. She not only supervised the buying of eggs for the Hastings incubator and paid the bills for the same but "went down every week to check up" and saw that some of the "tiers" in the incubator had eggs in them and some had chicks which unquestionably indicated staged incubation.

6. The Court erred in its Fnndings of Fact 8 in the finding that "the defendants have failed to establish by clear and convincing proof, still less beyond a reasonable doubt, that Hastings in fact knew and used on the Davis farm in 1911 the method of incubation disclosed in Claim 1 of the patent in suit, or that the method which Hastings then used was successful, or that said use was anything more than a casual or forgotten use, or that said use made any contribution to the art." The testimony of Defendants' witnesses, Milo M. Hastings, Walter B. Davis, and Isabel E. Davis agrees in that every feature of the method of incubation disclosed in claim 1 of the patent in suit was known [fol. 389] and used on the Davis farm in 1911, was successful in the repeated hatching of chicks, and was certainly neither casual nor forgotten.

7. The Court erred in its F-ndings of Fact 8 in its finding, with reference to the testimony of Mr. and Mrs. Davis. "Their belief in the presence of staged incubation obviously is attributable to the fact that they received bills for frequent shipments of setting eggs." They each testified that eggs were set in the Hastings incubator on Mr. Davis' farm in 1911 at intervals of at least twice a week. See Rec. pp. 103 and 113, and Mrs. Davis testified that in her inspection of said incubator she saw eggs in different stages of incubation; some trays having hatched chicks in them and other trays having unhatched eggs in them. See Rec. p. 113.

8. The Court erred in its Findings of Fact 8 that there was a significient "dearth of evidence" with reference to the method of hatching practised on the Davis farm in 1911 because neither Francis W. Orvis, editor of the "Poultry Digest" who brought Hastings and Davis together, nor Walter B. Davis' employe Miller, who operated the Hastings incubator after Mr. Hastings left Mr. Davis' employ, was produced as a witness. Both Orvis and Miller are dead.

9. The Court erred in its Findings of Fact 8 in finding that there was a significant "dearth of evidence" regarding the method of use of the Hastings incubator on the Davis farm in 1911 because none of the "probably a couple [fol. 390] of thousand" of Davis' guests who saw the incubator in operation was produced as a witness. Twenty-

four years had elapsed between the time the Hastings incubator and the method of its operation were seen by the transient guests of Davis and the time when this case was tried.

10. The Court erred in its Findings of Fact 8 in finding that there was a significant "dearth of evidence" in that no records were offered relating to the hatchings on the Davis farm. The testimony of Hastings and Mr. and Mrs. Davis is that the incubator was used for hatching chickens which were killed and eaten on said farm, and that evidence is confirmed by the contemporary documentary evidence of Defendants' Exhibit G, which is a book entitled "Davis Poultry Farm", referred to in the second paragraph of the Court's Findings of Fact 6 in the statement "Mr. Davis by public advertisement copyrighted and published in 1911, invited the public to visit his farm".

11. The Court erred in its Findings of Fact 8 in assuming that the Hastings incubator operated on the Davis farm had his fan outside a fabric enclosure of the egg chamber". Hastings' original application, Defendants' Exhibit F, specifies that he originally proposed to insure distribution of the air currents with respect to the egg chamber by perforated walls of fabric or other material. Hastings testified, as appears in the Cooley Record, Defendants' Exhibit F, as offered by Plaintiff's Counsel on Rec. p. 90, that he first installed such perforated walls in the incubator on [fol. 391] Davis' farm but immediately removed them when he found they impeded the circulation of air to an undesirable degree and that, thereafter, said incubator was operated without any such inclosure of the egg chamber.

12. The Court erred in its Findings of Fact 8 in finding that it was doubtful if the use of the Hastings incubator on the Davis farm in the Spring of 1911 was a successful use. It was repeatedly successful in accomplishing its purpose, to wit, the hatching of chicks and thus within the rule of Corona Cord Tire Co. v. Dovan, 276 U. S. 358.

13. The Court erred in its Findings of Fact 10 as to the "method used by the defendants in the use of all of the Robbins machines" specified in Findings of Fact 9.

14. The Court erred in its Conclusion of Law I in concluding that "Claim 1 is valid notwithstanding the defendants' contention that its subject-matter was previous

known and used by others in this country within the meaning of R. S. 4886.

15. The Court erred in its Conclusions of Law II in concluding that claim 1 is valid notwithstanding the defendants' contention that its subject-matter was "in public use and on sale in this country for more than two years prior" to the plaintiff's application for the patent in suit within the meaning of R. S. 4886.

16. The Court erred in its Conclusions of Law III in the conclusion that "Claim 1 is valid notwithstanding the de-
[fol. 392] fendants' contention that it 'does not disclose a successful method of operation' ".

17. The Court erred in its Conclusions of Law V in concluding that "The defendants' use of the Robbins models other than Nos. 17 and 23 likewise constituted an infringement of Claim 1".

18. The Court erred in its Conclusions of Law V in concluding "The fact remains that the defendants in their use of the Robbins apparatus have utilized all the essential elements disclosed in Claim 1". Claim 1 is for a method of hatching, an essential element of which is that the chicks shall emerge from the shells under the conditions specified in said claim. Those conditions are not found in Defendants' use of the Robbins models other than 17 and 23.

19. The Court erred in holding that the Defendants "have infringed upon Claim 1 of the patent by the operation of incubators known as Robbins No. 23, Robbins No. 17, Robbins No. 62 and Robbins No. 125".

20. The Court erred in holding "That the preliminary injunction previously issued in this cause was not improvidently granted".

21. The Court erred in requiring Defendants to account for "gains" and "advantages which the defendants have received from the infringement of Claim 1" in addition to the profits and damages, in disregard of R. S. 4921
[fol. 393] which limits Plaintiff's recovery and Defendant's accounting to profits and damages.

22. The Court erred in not holding claim 1 of the patent in suit invalid and void for lack of sufficient disclosure in the specification to enable anyone skilled in the art to practice the method of claim 1 without experimentation.

23. The Court erred in not holding claim 1 of the patent in suit invalid and void because the specification upon which it is predicated directs such operation of the incubator elements contemplated in said claim as would prevent hatching of eggs by destroying the life in the eggs before the eggs hatched.

24. The Court erred in not holding that the method of hatching which has been used by the Defendants since the Fall of 1930 is not within the scope of claim 1 in suit as interpreted by the Supreme Court of the United States in the opinions filed by Mr. Justice Stone in the Snow and Waxham cases.

25. The Court erred in not holding that claim 1 in suit is invalid and void because the subject-matter thereof was "known * * * by others in this country" within the meaning of R. S. 4886, before the Plaintiff Smith's invention or discovery thereof alleged by him to have been in the "Spring of 1914".

26. The Court erred in not holding that claim 1 in suit is invalid and void because the subject-matter thereof was [fol. 394] "used by others in this country" before the Plaintiff Smith's invention or discovery thereof, within the meaning of R. S. 4886.

27. The Court erred in not holding that claim 1 in suit is invalid and void because the subject-matter thereof was "in public use * * * in this country for more than two years prior" to the Plaintiff Smith's application for the patent in suit, within the meaning of R. S. 4886.

28. The Court erred in not holding that Claim 1 in suit is invalid and void because the subject-matter thereof was "on sale in this country for more than two years prior" to the Plaintiff Smith's application for the patent in suit, within the meaning of R. S. 4886. The testimony of Defendants' witnesses Milo M. Hastings, Walter B. Davis, and Isabel E. Davis agrees that the right to use the method of hatching in question was acquired from Hastings by Davis by the latter's payments to Hastings in the Spring of 1911, whereas the application for the patent in suit was not filed until October 26, 1916.

A. B. Hall and L. C. Hall, Doing Business as Hall Brothers, by Arthur E. Paige, Frank E. Paige, Their Attorneys.

[fol. 395] Citation, in usual form, omitted in printing.

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[fol. 396] IN UNITED STATES DISTRICT COURT

[Title omitted]

PRÆCIPE FOR TRANSCRIPT OF RECORD

To the Clerk of the Court:

Please incorporate into the Transcript for the appeal to the Circuit Court of Appeals for the Second Circuit of the above-entitled cause the following portions of the record:

1. Docket Entries.
2. Bill of Complaint.
3. Answer of Defendants.
4. Motion for Preliminary Injunction.
5. Order on Motion for Preliminary Injunction.
6. Defendants' Joinder of Issue on Motion of Plaintiff, and Order Thereon, for Preliminary Injunction against Defendants.
7. Decree and Order on Plaintiff's Motion for Preliminary Injunction.
8. Injunction.
9. Motion to Amend Defendants' Answer.
10. Amended Answer of Defendants.

[fol. 397] 11. Condensed statement in narrative form of testimony introduced upon the trial.

12. Plaintiff's Exhibits 1 to 33, inclusive.
13. Defendants' Exhibits A to I, inclusive.
14. Opinion of Judge Hincks.
15. Exception by Plaintiff.
16. Decree.
17. Petition for Appeal.
18. Order on Petition for Appeal.
19. Assignment of Errors.
20. Citation.
21. Præcipe for Transcript.
22. Clerk's Certificate.

Arthur E. Paige, Frank E. Paige, Counsel for Defendants. Robert P. Billings, Solicitor for Defendants.

Service of the foregoing Praecipe and receipt of a copy thereof, are acknowledged this 14th day of August, 1935.

Edmond M. Bartholow, Solicitor for Plaintiff, 2312 Spruce Street, Philadelphia, Pa.

August 13th, 1935.

FEP/EEG.

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[fol. 398] IN UNITED STATES DISTRICT COURT

[Title omitted]

STIPULATION AMENDING PRAECIPE

It is hereby stipulated by and between Counsel for the respective parties that item "12" of the Praecipe filed August 14, 1935, be changed to read as follows:

"12. Plaintiff's Exhibits 1 to 32, inclusive."

Edmond Bartholow, Solicitor for Plaintiff.

September 19, 1935.

Robert P. Billings, Solicitor for Defendants.

September 19, 1935.

[fol. 399] IN UNITED STATES DISTRICT COURT

[Title omitted]

STIPULATION AMENDING PRAECIPE

It is hereby stipulated by and between Counsel for the respective parties that item "13." of the Praecipe filed August 14, 1935, be changed to read as follows:

"13. Defendants' Exhibits F to I, inclusive."

Frank E. Paige, Counsel for Defendants-Appellants.

August 29, 1935.

A. L. Ely, Counsel for Plaintiff-Appellee.

August 30, 1935.

[fol. 400] IN UNITED STATES DISTRICT COURT

[Title omitted]

STIPULATION AS TO CERTAIN EXHIBIT

It is hereby stipulated by and between Counsel for the respective parties that Defendant's Exhibit G shall not be included in the printed Transcript of Record, but shall go up to the Circuit Court of Appeals as a physical exhibit.

September 27, 1935.

Rockwell & Bartholow, Solicitors for Plaintiff-Appellee.

September 27, 1935.

Robert P. Billings, Solicitor for Defendants-Appellants.

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[fol. 401] IN UNITED STATES DISTRICT COURT

[Title omitted]

STIPULATION AS TO RECORD

It is hereby stipulated and agreed that the foregoing is a true transcript of the record of the said District Court in the above-entitled matter as agreed on by the parties.

Dated, October —, 1935.

Edmond Bartholow, Solicitor for Plaintiff. Robert P. Billings, Solicitor for Defendants.

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[fol. 402] Clerk's certificate to foregoing transcript omitted in printing.

[fol. 403] UNITED STATES CIRCUIT COURT OF APPEALS FOR THE SECOND CIRCUIT

SAMUEL B. SMITH, Plaintiff-Appellee,

against

A. B. HALL and L. C. HALL, d. b. a. Hall Brothers, Defendants-Appellants

Before Manton, Swan and Chase, Circuit Judges

Appeal from the United States District Court for the District of Connecticut. Suit for infringement of patent. Decree for plaintiff; defendants appeal.
Reversed.

Arthur E. Paige, Esq., Frank E. Paige, Esq., Attorneys for Appellants.

Albert L. Ely, Esq., Edmund M. Bartholow, Esq., Geo. C. McConnaughey, Esq., Attorneys for Appellee.

MANTON, Circuit Judge:

This suit is for infringement of claim 1* of patent No. 1,262,860 issued April 16, 1918, on an application filed October 26, 1916, for a method for the incubation of eggs. [fol. 404] This claim was held valid and infringed in Smith v. Snow (294 U. S. 1) and Waxham v. Smith (294 U. S. 20). It embraces a method of hatching which makes it possible to increase the capacity of an incubator to many thousands

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* Claim 1 reads: The method of hatching a plurality of eggs by arranging them at different levels in a closed chamber having restricted openings of sufficient capacity for the escape of foul air without undue loss of moisture and applying a current of heated air, said current being created by means other than variations of temperature and of sufficient velocity to circulate, diffuse and maintain the air throughout the chamber at substantially the same temperature, whereby the air will be vitalized, the moisture conserved and the units of heat will be carried from the eggs in the more advanced stage of incubation to those in a less advanced stage for the purpose specified.

by the combination of two major steps. Instead of setting the entire capacity of an egg chamber at one time, the inventor proposed to fill the chamber with successive settings, preferably three or four days apart, so that when the chamber was filled it contained eggs in different stages of incubation, some in the endothermic phase and some in the exothermic phase. Smith propelled a strong draft of properly heated air over the eggs thus set in staged incubation "with sufficient velocity to circulate, diffuse, and maintain the air throughout the chamber at substantially the same temperature". In this way, the heat generating property of the further advanced eggs is offset by the heat absorbing properties of the less advanced eggs so that there is a continuous tendency to equalize the temperature throughout the cabinet at approximately the temperature of the introduced current of air.

However, this record differs from those before the Supreme Court in Smith v. Snow and Waxham v. Smith (supra) for here appellants have offered evidence of prior public use of the patented method and knowledge thereof by Milo Hastings. He had been a poultryman for the Department of Agriculture in 1906 and 1909, travelling extensively and visiting poultry plants and experimental stations operating incubators. In 1909, the "Dollar Hen", a [fol. 405] book written by him was published. Among other things he described there an idea for the plan of construction and operation of a new type of hatcher. He said:

"The eggs are kept in bulk in special cases which are turned as a whole and may rest on either of four sides. At hatching times the eggs are spread out in trays in a special hatching room, which is only large enough to accommodate chicks in the amount of one-sixth of the incubator capacity, for twice a week deliverings or one-third if weekly deliveries are desired.

"There are no pipes or other sources of heat in the egg chambers. All temperature regulation is by means of air heated (or cooled as the case may be) outside of the egg rooms and forced in to the egg rooms by a motor driven cone fan, maintaining a steady current of air, the rate of movement of which may be varied at will. The air movement maintained will always be sufficiently brisk, however, to prevent an uneven-ness (sic) of temperature in different parts of the room."

This, it is said, was a disclosure of forced draft and staged incubation in the method of incubating and hatching eggs. It is argued that twice a week and weekly deliveries necessarily contemplate that the eggs in the egg room would have to be of different ages and placed in staged incubation with the forced draft circulation maintaining an even temperature.

In 1910, Hastings built and operated an incubator of 6,000 egg capacity for one Davis of Brooklyn, N. Y. embodying these ideas. Drawings prepared for this trial under Hastings' supervision purport to illustrate this incubator and original photographs with published illustrations and descriptions are in the record. Hastings, Davis and his wife all testified that the apparatus and the method of hatching used in this incubator were such as indubitably to anticipate Smith. There can be no doubt that there was a closet chamber, in which the eggs were arranged in stacks of trays through which a current of heated air was blown [fol. 406] by a mechanical fan. The questioned point is whether or not staged incubation was used and known there. Hastings specifically testified that it was. Davis and his wife both testified that eggs were put in the chambers as they came in, once or twice a week. We should be unwilling to accept this oral testimony if it were uncorroborated. See Barbed Wire Patent Case, 143 U. S. 275,284; Dearing v. Winone, 155 U. S. 286,301; General Motors Corp. v. Leer Auto Supply Co., 60 Fed. 2, 904 (C. C. A. 2). But the necessary support is present here. An article in Poultry Culture, describing the later operations of Hastings at Muskogee, said: "• • • the moving air adds to or removes heat from the eggs with great rapidity. Because of this fact, eggs at all stages can be placed in the same trays of the Hasting Hatchery with little or no injury. Mr. Hastings hatched several thousand eggs under such conditions in his Brooklyn (Davis) plant last year." This was published before any motive for so declaring could be possible. Further indication that staged incubation was used at the Davis plant is taken from the Hastings' application for a patent, and the file wrapper relating to it. This application No. 624,885 was filed May 3, 1911. It was designed to embody the invention practiced by Hastings at the Davis plant, and is witnessed by Mr. Davis and Isabel Carkhuff, who present Mrs. Davis. The drawing of the apparatus

shows an undivided egg chamber down through which air is driven by a fan so that it circulates through a source of heat and then is drawn through the back of the fan and again started on its circuit. There are no separate chambers shown and in his application Hastings makes no men-
[fol. 407] tion of any way of providing separate chambers with different temperatures. In view of Hastings' avowed intention of incubating large numbers of eggs at the same time, and his substantiated declarations that he did have the incubator at Brooklyn operating with two thousand eggs in it, he must have had eggs of varying stages of incubation there, since it is clear that the eggs were supplied in relatively small amounts. There is in the record documentary evidence specifically pointing out the fact that staged incubation was embraced in Hastings' idea. His original application was undirected by counsel. When he met with difficulties in putting the patent through, he employed attorneys whose brief on the appeal to the three Examiners in Chief contained the following:

"The problem has been to enable the incubating operations to be carried on continuously, if so desired, with eggs at all stages of development, and with all of a vast number of eggs subjected to the same temperature and atmospheric conditions best adapted for the development of the embryo, • • •

The simple way in which applicant overcame the difficulty was through the provision of a mechanically operated air forcing means which would force a rapid circulation of air through the whole collection of eggs in the chamber and past the heater. The mechanical air forcing means is an essential factor; if heat is to be conserved and the conditions maintained uniform; for a circulation, which is due to differences in temperature in different portions of the circulator system, as, for example, where the air is circulated by the effect of the heater in causing the heated air to rise and pass into or through the incubating chamber, will not answer for large collections of eggs. • • •

In the Hastings hatchery, a current of air is blown past each and every egg at the rate of thirty feet per minute and this rapidly moving air quickly bringing the temperature of
[fol. 408] the egg to approximately that of the air. This method of heating keeps the temperature of the eggs in the advanced state of incubation down within a few degrees

of that of the air, the exact difference being regulated at will by adjusting the speed of the fan. When properly adjusted the same blast of air used to heat fresh eggs does equally well for eggs in the advanced stages just as the same temperature of the body of the hen incubates the eggs at all stages of development, without recourse on the hen's part to the 'hatching fever', erroneously supposed to explain the higher temperature of eggs at a more advanced stage of development. Owing to this fact eggs at all stages may be handled simultaneously with uniformly good results, * * * The operator of a Mechanical Draft plant may switch as much 'fresh' or outdoor air into this inner circulation as he is willing to heat. The inventor's practice is to use but a small portion of outdoor air except in cases of excessive humidity, when a large exchange of air is utilized as a simplest means of increasing evaporation. * * *

The introduction of moisture from the mist spray nozzles in the fan boxes to increase humidity, or running in outside air to decrease it as indicated by egg weights or air cell shrinkage is sufficient for ordinary hatching practice."

[fol. 409] The application for a patent was denied by two of the examiners, with one dissenting. Without funds he pursued his application no further.

There can be no question that the quoted language expressed the idea later patented by Smith. The argument that "eggs in different stages may be handled simultaneously" certainly came from the inventor and not the attorneys. Although this specific point is not made in the original application filed by Hastings, his first specification was: "My invention is that of a hatchery in which I secure better ventilation and a more uniform temperature throughout the hatching chamber by substituting a forced draft for gravity drafts." In view of his avowed aim of continuous hatching in great numbers, there is implicit the idea that the eggs will not be in the same stages. And the application and file wrapper make no mention of different chambers in which eggs of equal maturity would be placed, with the consequent necessity of adjusting the temperature of the air current to the varying requirements of the different stages. In fact, he mentions "uniform ventilation and an even temperature throughout all parts of the hatching chamber. We think the attorney's brief does not represent a new idea but a clarification of an old one.

An abandoned application can be used to clarify the character of a claimed prior use (Interurban Ry. &c. Co. v Westinghouse El. & Mfg. Co., 186 Fed. 166 (C. C. A. 6)) although alone it might not be acceptable to establish prior use of Wright Co. v. Herring-Curtiss Co., 177 Fed. 257 (C. C. N. Y. 1910).

There is uncontradicted testimony that this Davis hatchery was an operative success. It was in use during the [fol. 410] hatching seasons of 1910 and 1911. Its discontinuance is explained by the sponsor's financial reverses and its destruction by the fact that it was built within the cellar of the leased farmhouse which Davis had to leave.

Hastings did not abandon the idea. He promptly took it up on a larger scale at Muskogee, where he built a 30,000 egg plant and embodying the same features. This ran through the hatching seasons of 1912 and 1913. It was similar to the one built for Davis in Brooklyn. Photographs of it were taken at the time of its use; articles which appeared in newspapers and technical publications, with photographs of the incubator, are in the record. The principle of a forced draft is conclusively proven, and it appears that Hastings realized that eggs in different stages of incubation could be included in the same closed circuit. Drawings of this incubator were produced and received in evidence. That this incubator used a forced draft for the distribution of heat to maintain equal temperature throughout all the eggs in the seven separate incubating chambers, is clearly shown. In these chambers, the air which entered at the time was driven by the forced draft vertically, down toward the eggs trays and was returned by the open space beneath the trays, to the fan or blower from which the circuit passed the heat or continued on a complete continuous circuit. The drawing represents the machine as described in several articles with photographic illustrations. The electrical contractor who installed the fans and electrical controls testified. A photograph of the motor driven blower in the incubator and the description appeared in the Electrical World of July 6, 1912. That description dis- [fol. 411] closed the use of a motor-driven blower to force evenly heated air to all parts of the tray racks.

An album of original photographs of the motor-driven blower and the superimposed egg trays which slide in the incubator chambers are shown. The practice of the method

of Smith's patent is testified to by witnesses who saw the plant operated and who participated in its operation during the two hatching seasons.

In this operation, Hastings testified that the principle of staged incubation along with forced draft circulation was used.

Although the patent has been held valid in a number of cases, only two Circuit Courts have considered Hastings. In a prior litigation (Buckeye v. Wolf, 291 Fed. 252 (N. D. C.), affd. 296 Fed. 680 (C. C. A. 6)), there was introduced the publication in The Dollar Hen and other publications as well as the Hastings' application and there it was found that these did not describe an anticipation of Smith's method. While the patent application is referred to, no mention is made of the brief of Hastings' patent attorneys. Hastings was not a witness nor was any witness called to testify to what his prior use had been. In Buckeye v. Cooley (17 Fed. 2,453) the same evidence was in the record and Hastings was a witness, but the Third Circuit found his testimony unconvincing and that alleged prior uses were not of Smith's method because they did not provide for a regular current of air. This is the first time the prior uses at the Davis place and at Muskogee have been so fully presented and substantiated.

[fol. 412] On the record now before the court, it is impossible to agree that Smith's discovery was "not known or used by others in this country before his invention or discovery thereof."

Decree reversed.

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[fol. 413] UNITED STATES CIRCUIT COURT OF APPEALS, SECOND CIRCUIT

At a stated term of the United States Circuit Court of Appeals in and for the Second Circuit, held at the United States Court House in the City of New York, on the 13th day of April one thousand nine hundred and thirty-six.

Present: Hon. Martin T. Manton, Hon. Thomas W. Swan, Hon. Harrie B. Chase, Circuit Judges.

SAMUEL B. SMITH, Plaintiff-Appellee,

vs.

A. B. HALL and L. C. HALL, d. b. a. Hall Brothers, Defendants-Appellants

Appeal form the District Court of the United States for the District of Connecticut

This cause came on to be heard on the transcript of record from the District Court of the United States for the District of Connecticut, and was argued by counsel.

On consideration whereof, it is now hereby ordered, adjudged, and decreed that the decree of said District Court be and it hereby is reversed with costs.

It is further ordered that a Mandate issue to the said District Court in accordance with this decree.

Wm. Parkin, Clerk.

[fol. 414] [Endorsed:] United States Circuit Court of Appeals, Second Circuit. Samuel B. Smith vs. A. B. Hall and L. C. Hall. Order for mandate. United States Circuit Court of Appeals, Second Circuit. Filed Apr. 13, 1936. William Parkin, Clerk.

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[fol. 415] UNITED STATES OF AMERICA,
Southern District of New York:

I, William Parkin, Clerk of the United States Circuit Court of Appeals for the Second Circuit, do hereby certify that the foregoing pages, numbered from 1 to 414, inclusive, contain a true and complete transcript of the record and proceedings had in said Court, in the case of Samuel B. Smith, Plaintiff-Appellee, against A. B. Hall and L. C. Hall, d. b. a. Hall Brothers, Defendants-Appellants, as the same remain of record and on file in my office.

In testimony whereof, I have caused the seal of the said Court to be hereunto affixed, at the City of New York, in the Southern District of New York, in the Second Circuit, this 15th day of April, in the year of our Lord one thousand nine hundred and thirty-six, and of the Independence of the said United States the one hundred and sixtieth.

Wm. Parkin, Clerk. (Seal United States Circuit Court of Appeals, Second Circuit.)

[fol. 416] SUPREME COURT OF THE UNITED STATES

ORDER ALLOWING CERTIORARI—Filed May 25, 1936

The petition herein for a writ of certiorari to the United States Circuit Court of Appeals for the Second Circuit is granted.

And it is further ordered that the duly certified copy of the transcript of the proceedings below which accompanied the petition shall be treated as though filed in response to such writ.

(7988-C)

**DEFENDANT'S EXHIBIT F**
**For Identification**

**DEFENDANT'S EXHIBIT D E**

**DEPARTMENT OF COMMERCE**
PATENT OFFICE

*To all persons to whom these presents shall come, Greeting:*

S TO CERTIFY that the annexed is a true copy from the records of this office of the File Wrapper, Contents and Drawing, the matter of the

Abandoned Application of

Milo Hastings,

Filed May 5, 1911, Serial Num.: 624,683,

for

provement in Hatchery for the Eggs of Domestic Fowl.

In Testimony Whereof I have hereunto set my hand and caused the seal of the Patent Office to be affixed, at the City of Washington, this third day of October in the year of our Lord, one thousand nine hundred and twenty-five and of the Independence of the United States of America the one hundred and fiftieth.

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DEFENDANT'S EXHIBIT F

DIV. 38 (EX'R'S BOOK) 14/2 - C

NUMBER (Series of 1909).

624885

PATENT No.

Name Milo Hastings

Assn. to Hastings Corporation, of New York N.Y. a corp. of New York

of Brooklyn.

County of New York

State of

Invention Hatchery for the Eggs of Domestic Fowl

| ORIGINAL | | | REVIEWED |
|---|---|---|---|
| Petition | April 25 | 1911 | |
| Affidavit | " " | 1911 | |
| Specification | May 3 | 1911 | |
| Dran. of | Apr. 25 | 1911 | |
| Model or Specimen | | 191 | |
| First Fee Cash | $15. Apr. 28 | 1911 | |
| " " Cert | | 191 | |
| Appl. filed complete | May 3 | 1911 | |

Examined

Allowed

Notice of Allowance 191

Final Fee Cash 191

" " Cert 191

Patented

Attorney Church & Church — Mech. Dept.

Assistant Attorney

Division of App. No. ..... filed ..... 191

PARTS OF APPLICATION FILED

DEPARTMENT OF THE INTERIOR
UNITED STATES PATENT OFFICE
WASHINGTON

APRIL 28, 1911.

Mr. Milo Hastings,
Kings Highway & E. 23rd Street,
Brooklyn, N. Y.

Sir:

The incomplete money order for $15.00 received with the application of Milo Hastings, is herewith returned as same cannot be accepted by this Office.

Upon receipt of complete money order the same will be filed as directed.

Respectfully,

A. L. Pope
Acting Chief Clerk.

Enclosure.

# PETITION.

[FROM RULES OF PRACTICE, U. S. PATENT OFFICE, PAGE 62, FORM 4.]

To the Commissioner of Patents:

Your petitioner, Milo Hastings

citizen / subject } of the United States

and resident of Brooklyn

in the county of Kings, and State of New York

whose post-office address { is / are } Kings Highway and E. 23d Street

prays that Letters Patent may be granted to him

for the improvement in a hatchery for the eggs of domestic fowl

as set forth in the annexed specification

And, hereby appoint*

of, State of, attorney,

with full power of substitution and revocation, to prosecute this application, to make alterations and amendments therein, to receive the patent, and to transact all business in the Patent Office connected therewith.

Signed at Brooklyn in the County of Kings and State of New York, this 15th day of April, 1911.

Inventor's full name: { Milo Hastings

* If the power of attorney be given to a firm, the full name of each member of the firm must be inserted [illegible]

NOTE.—In the case of the assignment of the whole interest in the invention, the petition and oath must [illegible] [illegible], if alive, even if the patent is to issue to an assignee. If the inventor be dead, it may be made [illegible] or administrator, if known, by the guardian, conservator, or legal representative.

SPECIFICATION.

To all whom it may concern:

Be it known that I, Milo Hastings, a citizen of the United States, residing at Brooklyn, in the county of Kings, and the state of New York, - have invented a new and useful hatchery for the eggs of domestic fowl, of which the following is a specification:

My invention is that of a hatchery in which I secure better ventilation and a more uniform temperature throughout the hatching chamber by substituting a forced draft for gravity drafts.

I attained this end by the mechanism illustrated in the accompanying drawing. This represents a vertical section of the hatchery, in which A is a hatching chamber wherein are placed the eggs, B is an electric fan which is to run constantly, maintaining a steady current of air through the hatching chamber, C is a heater, D any uniform or regulated source of heat. I use a gas flame, the pressure of which is controlled by a governor, EE ar fabrics or perforated partitions for the purpose of causing an even horizontal distribution of air throughout the hatching chamber.

I believe it to be best to cause the air to enter the hatching chamber from above, but my invention is not limited to any particular circulation or movement of the air and by the use of the fan, the gravity drafts may be overcome, and the air caused to move in any desired direction.

Ventilation I secure through cracks around the door of the hatching chamber or other small openings in any part of the air circuit. The air being constantly in motion, requires less rejuvenation than dead air.

The part of my apparatus that is new, and which has not before been used in connection with hatching devices, is that of the fan, and this I maintain to be of distinct utility in securing uniform ventilation and an even temperature throughout all parts of the hatching chamber.

I claim: The combination in a hatchery

per A for the eggs of domestic fowl, of a room or chamber

" for holding eggs to be incubated and a fan pump, or

" other mechanical device with moving parts for causing

Sub B' a circulation of air in or through such chamber.

Milo Hastings

Witnesses 1 Edgar Chambless
2 Jeannette Cohen

# OATH

To accompany an application for United States Patent.

Milo Hastings

Insert name

the above-named petitioner, being sworn (or affirmed), depose and say that he is a citizen of the United States

and resident of Kings Highway and E. 23d Street, Brooklyn New York

that he verily believes himself to be the original, first, and sole inventor of the improvement in a hatchery for the eggs of domestic fowl

described and claimed in the annexed specification; that he does not know and does not believe that the same was ever known or used before his invention or discovery thereof, or patented or described in any printed publication in any country before his invention or discovery thereof, or more than two years prior to this application, or in public use or on sale in the United States for more than two years prior to this application; that said invention has not been patented in any country foreign to the United States on an application filed by him or his legal representatives or assigns more than twelve months prior to this application; and that no application for patent on said improvement has been filed by him or his representatives or assigns in any country foreign to the United States, except as follows:

Oath filed May 24/11

Inventor's full name: Milo Hastings

Sworn and subscribed before me this 20th day of April, 1911

J. P. Gannon
(Signature of justice or notary)

Notary Public #8
(Official character)

[illegible]

ADDRESS ONLY
THE COMMISSIONER OF PATENTS,
WASHINGTON, D. C.

DEPARTMENT OF THE INTERIOR
UNITED STATES PATENT OFFICE
WASHINGTON

April 28 , 1911.

Sir:

I have to acknowledge the receipt of your informal application for Patent , the title of which is improvement in Matchery for the Eggs of Domestic Fowls.

This application is informal because you have failed to sign the specification, when signed, your signature must be attested by two witnesses, papers are accordingly returned herewith.

The government filing fee of $15 is also required.

This application must be completed within one year from the above date.

Very respectfully,

E. B. Moore.
Commissioner of Patents.

Milo Hastings,
Kings Highway & E. 23rd St.,
Brooklyn, N.Y.

Note.—In order to constitute an application for a patent, the inventor is by law required to furnish his petition, specification, oath, and drawings (where the nature of the case admits of drawings) and to pay the required fee.
No application is considered complete, nor can any official action be had thereon, until all its parts, as here specified, are furnished in due form by the inventor or applicant.

Insert name at top of oath.

Paper No. 8

DEPARTMENT OF THE INTERIOR

UNITED STATES PATENT OFFICE

WASHINGTON May 24, 1911.

323

Milo Hastings,

King's Highway and E. 23rd St.,

Brooklyn, N.Y.

*Please find below a communication from the EXAMINER in charge of your application.*

Ser. No. 624,835, filed May 3, 1911: Hatchery for the Eggs of Domestic Fowl.

E. B. Allen

Commissioner of Patents.

Since the oath filed bears no venue, applicant must either file a new oath in proper form or else furnish a certificate from the notary who administered the oath, in accordance with the practice recited in ex parte Delavoye, 124 O.G., 626.

In line 14 of page 1 the word "vertical" is misspelled. In line 15 the words -"the eggs" should be canceled and inserted before "are".

The claim is informal as being alternative in form and applicant should cancel the words "room or" in line 2 and the phrase "or.....moving parts".

The claim is rejected on

Hawkins, 725,079, April 14, 1903,
Claim 43, X-ref. or
Osborne, 806,325, April 20, 1906,

It is considered that applicant's arrangement is merely the double use of the arrangement there shown and that there is no particular combination between the forced draft and an incubator since various forms of natural draft passages are shown in the well known forms of incubator.

E. B. Ellis,
Ex.

250

624,[illegible]

9

June 19, 1911.

Commissioner of Patents,

Washington, D.C.

Sir:

Refering to paper No. 2, Ser. No. 624,[illegible], filed May 5, 1911: Hatchery for the Eggs of Domestic Fowl—

If you will send me an additional blank, I will file a new oath as suggested.

I authorize you to correct the spelling of the word "vertical" in line 14, and to transfer the words "the eggs" inserting same before "are" in line 15, page 1 of the specification.

I authorize you to eliminate the alternative features of the claim by striking out the words "room or" in line two and the words "fan, pump, or other" in lines three and four.

I maintain that the rejection on
Hawkins, [illegible], April 14, 19[illegible],
Osborne, [illegible], April 28, 1908,
is beside the point. These patents refer to the use of forced ventilation for purposes unrelated to incubation. The use of a forced draft in combination with an incubator I contend to be patentable, as it is a distinctly new use of a well known mechanical device, which in its new use required invention to reach and which has distinct utility.

To contend that the new use is not patentable because passages for natural drafts exist in well known types of incubators is unsound; thousands of well known patents including the two cited by your examiner would be thrown out by a similar line of reasoning. There are scores of existing incubator patents based upon the form of these natural draft passages, and I maintain that the introduction of a device for generating a force draft to be of far greater uniqueness and utility than the varying designs for utilizing natural drafts.

For the reasons above given, I beg for a re-examination of my application.

Respectfully yours,

Milo H[illegible]

DEPARTMENT OF THE INTERIOR

UNITED STATES PATENT OFFICE,

WASHINGTON July 13, 1911.

Milo Hastings,

Kings Highway and East 23rd Street,

New York, N. Y.

*Please find below a communication from the EXAMINER in charge of your application.*

Ser. No. 624,835, filed May 23, 1911, for Hatchery for the Eggs of Domestic Fowl.

E. B. Ellis

*Commissioner of Patents.*

In response to the communication filed June 30, 1911.

A blank for the new Oath required is herewith enclosed.

The claim is again rejected on Hawkins or Osborne of record for the reasons stated. This rejection is made final under the decision in Ex parte Miller, 139 O. G. 750 and applicant's appeal lies to the Board of Examiners-in-Chief.

G. R. Isle,

Ex.

[illegible] HASTINGS
[illegible] E. [illegible] ST
NEW YORK CITY

624.885 5
Oath

July 22 1911

Commissioner of Patents
Washington D.C.

Sir:
Inclosed is a new oath for Application 624,885, filed May 3, 1911 - Hatching for the Eggs of Domestic Fowl. as per your communication of May 26, 1911.

Respectfully yours
[illegible] Hastings

# OATH.

[illegible] accompany an application for United States Patent.

[illegible] of New York
County of New York } ss:
Milo Hastings

[illegible] above-named petitioner, being sworn (or affirmed), deposes and says that he is a [illegible] of the United States of America;

[illegible] resident of King's Highway and East 23d street in the Borough of Brooklyn City of New York, county of Kings, state of New York, that he verily believes himself to be the original, first, and sole inventor of the improvement in a hatchery for the eggs of domestic fowl

[illegible] and claimed in the annexed specification; that he does not know and does not believe [illegible] the same was ever known or used before his invention or discovery thereof, or patented or [illegible] in any printed publication in any country before his invention or discovery thereof, [illegible] than two years prior to this application, or in public use or on sale in the United States for more [illegible] two years prior to this application; that said invention has not been patented in any country foreign [illegible] United States on an application filed by him or his legal representatives or assigns [illegible] than twelve months prior to this application; and that no application for patent on said improvement has been filed by him or his representatives or assigns in any country foreign to [illegible] United States except as follows:

[illegible]

Inventor's full name: Milo Hastings

[illegible] to and subscribed before me this 21st day of July, 1914

J. P. Gannon
(Signature of justice or notary.)

Notary Public #8
[illegible] New York

[illegible]

253

DEPARTMENT OF THE INTERIOR

UNITED STATES PATENT OFFICE

WASHINGTON Aug. 14, 1911.

Eric Hastings,

King's Highway and 23rd St.,

Brooklyn, N.Y.

Please find below a communication from the EXAMINER in charge of your application.

Ser. No. 624,895. Filed May 3, 1911: Hatchery for the Eggs of Domestic Fowl.

E. B. Moore.

Commissioner of Patents.

In response to the communication filed July 24, 1911:

The new oath required has been received.

The application stands under final rejection of the date of July 28, 1911, and periods which applicant must act will continue with that date.

G. Brooke

Ex.

260

Pole Latch

Hon. Commissioner of Patents,

Sir:

I hereby appoint

Messrs. Church & Church ( a firm composed of Melville Church and Joseph B. Church) of Washington, D. C., as my attorneys in the matter of my application Serial No. 624,885, filed May 3, 1911, Improvements in Latches for the Eggs of Domestic Fowl, with full power of substitution and revocation, to prosecute said application, to make alterations and amendments therein, to receive the patent and to transact all business in the Patent Office connected therewith.

Mitt Hastings

IN THE UNITED STATES PATENT OFFICE.

Milo Hastings;

Hatchery for Eggs of Domestic Fowl;

Filed May 3, 1911;

Serial No. 624,855.

ROOM 378

Hon. Commissioner of Patents,

Sir:-

In reply to Office letter of July 15, 1911. The present attorneys have but recently been called into this case, and after a careful consideration of the application, together with a mass of data and information derived from a practical hatchery of large capacity which is being operated by the applicant, they are of the opinion that the invention has not been fully comprehended by the Examiner, due, perhaps, largely to the lack of skill of the applicant himself in the handling of applications for patents, or to his lack of knowledge as to the points which should be presented for the Examiner's consideration.

For this reason we have to request that the case be further considered in connection with the claim presented herein, and that said claim be entered as a substitute for the present claim, a course which we believe is justifiable under the circumstances, although we also request that, if the Examiner does not feel at liberty to re-examine the application, the claim be entered for the purposes of appeal.

Please amend the case by canceling the present claim and substituting the following therefor:

"A hatchery for eggs embodying an incubating chamber adapted for the reception of superposed trays for eggs to be incubated, whereby said eggs will be arranged in layers one above the other, means for effecting a distribution of air uniformly to the eggs in the chamber, means for heating the air, and mechanically operated means for forcing a uniform circulation of air through all parts of the chamber and past the heater, whereby convexion currents will be eliminated, temperature and gaseous stratification of the air in the chamber overcome, and the eggs subjected to the influence of air of the same temperature and composition."

REMARKS.

The problem presented to applicant was one which finds no analogy in the small incubators such as are commonly used throughout the country, for in them the chamber is of such small size and the eggs located so close together in a vertical direction that the disturbing influences due to convexion currents and air stratification amount to nothing. It is well known that eggs during the process of incubation exert a very marked influence on the air surrounding them, as the temperature of the eggs themselves varies in accordance with the stage of their development and the gaseous emanations tend to produce vitiated conditions which exert a marked influence upon the eggs themselves, and especially upon adjacent eggs, if the eggs are at different stages of their development. The eggs themselves thus produce both temperature and gaseous stratification of the air in the chamber, but this is easily overcome in a small incubator by ordinary convexion currents such as are set up by the heater or by the temperature of the eggs themselves, but in

a large hatchery where many hundreds, and even thousands, of eggs are being continually advanced in the process of incubation the ordinary means for causing the circulation of air by convection currents through and in the incubating chamber has been demonstrated as being totally inadequate, and this is believed to be one of the principal reasons why, up to the present time, hatcheries of large capacity have proven to be practical failures, except, perhaps, in a few isolated instances, where natural temperature and moisture conditions of the whole atmosphere have been exceptionally favorable. Applicant's invention, on the other hand, provides a means whereby success is practically assured, regardless of the location of the hatchery, and such success is believed to be due to the fact that, he has by a painstaking and very costly series of experiments, discovered that the temperature and gaseous stratification in the incubating chamber must be overcome by a mechanically forced circulation of the air which will insure a correct and uniform influence of the air upon all of the eggs in the incubating chamber, and this forced circulation must be such as to overcome the counteracting influence of the eggs upon the air when said eggs are in the different stages of incubation. This feature has seemingly never been effectually worked out by investigators along this line prior to applicant, and it seems to the attorneys to present all of the characteristics of a patentable invention of the highest order. The fact that air both heated and cooled has been forced into and through apartments and vehicles, such as railway cars, etc., does not suggest the idea of overcoming the difficulties encountered in the practical operation of incubators of large capacity, especially as the conditions which exist in such hatcheries have not

heretofore been adequately understood, and the remedies for the conditions as applied to incubators of small capacity were totally inadequate.

In view of the fact that, if this amendment is admitted for the purpose of appeal only, the appeal should be taken before the 15th of July, it is requested that the foregoing amendment and argument be considered promptly or in ample time for the appeal to be filed within the statutory time.

Respectfully,

MILO HASTINGS,

By Schmuck & Schmuck

His Attorneys.

May 24, 1912.

Div. 38 Room 378 MD ____ OJD Paper No. 9

Address: The Commissioner of Patents, Washington, D. C.

All communications respecting this application should give the serial number, date of filing, and title of invention.

DEPARTMENT OF THE INTERIOR

UNITED STATES PATENT OFFICE

WASHINGTON June 25, 1912.

Milo Hastings,

c/o Church and Church,

Wash. D. C.

Please find below a communication from the EXAMINER in charge of your application.

Ser. No. 624,885, filed May 3, 1911, for Hatchery for the Eggs of Domestic Fowl.

E. B. Moore,

Commissioner of Patents.

In response to the communication filed May 24, 1912.

The claim presented by the amendment of the above date has been entered for the purposes of appeal. It is considered that the references of record are anticipations of this claim and the case stands under the final rejection of July 15, 1911.

J. R. Ice,

Ex.

M. M. D.

IN THE UNITED STATES PATENT OFFICE.

Milo Hastings;
Hatchery for Eggs of Domestic Fowl;
Filed May 3, 1911;
Serial No. 624,885.

-ROOM 378.

---

APPEAL TO THE BOARD OF EXAMINERS-IN-CHIEF.

Hon. Commissioner of Patents,

Sir:

I hereby appeal to the Board of Examiners-in-Chief from the decision of the Primary Examiner, rejecting finally my above entitled application, and allege as ground therefor, that the Examiner erred in holding the claim presented by the amendment of May 24, 1912 to be anticipated by the references of record.

An oral hearing is requested.

Respectfully,

Milo Hastings,

By Church & Church

His Attorneys.

July 8, 1912.

DEPARTMENT OF THE INTERIOR,

UNITED STATES PATENT OFFICE.

Washington, D. C. July 18, 1913.

---

MID-LINE

In re application
Milo Hastings;
Ser. No. 624,885;
Filed May 5, 1911;
Hatchery for the Eggs of Domestic Fowl.

Before the
BOARD of EXAMINERS-in-CHIEF
on APPEAL.

Examiner's Statement.

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The claim rejected is -

A hatchery for eggs embodying an incubating chamber adapted for the reception of superposed trays for eggs to be incubated, whereby said eggs will be arranged in layers one above the other, means for effecting a distribution of air uniformly to the eggs in the chamber, means for heating the air, and mechanically operated means for forcing a uniform circulation of air through all parts of the chamber and past the heater, whereby convection currents will be eliminated, temperature and gaseous stratification of the air in the chamber overcome, and the eggs subjected to the influence of air of the same temperature and composition.

The references cited are -

Hawkins, 758,079, April 14, 1903.
Osborne, 886,325, April 28, 1908.

In the device under consideration applicant has supplied an electric fan in an ordinary type of incubator, having an egg chamber and a suitable heater, in order to produce a forced circulation of air through all parts of the chamber.

The references, Hawkins and Osborne, were cited to show that it is old to use a mechanical means to produce a forced circulation. The claim was rejected upon the ground that it involved mere double use of the devices there shown and that applicant had applied them to an old type of incubator such as shown by

Ser. No. 524,885.....2.
Ex'r's Statement.

?

[illegible],719, May 16, 1905, wherein it is shown common to so arrange the device that a natural circulation of air will be produced by the change in temperature thereof. It has not been shown that any new results are obtained other than those always procured through the substitution of forced for natural draft.

It is therefore believed that the device is a most obvious example of the double use of an old apparatus and that the claim was properly rejected upon this ground.

Respectfully submitted,

G. R. Ide

Examiner, Division 38.

MMD

Copy

Sub-Sl. No. 5585 Page No. 12
Notice of Hearing

DEPARTMENT OF THE INTERIOR
UNITED STATES PATENT OFFICE
WASHINGTON

July 19, 1912.

Sir:

The case of Milo Hastings

Serial No. 624885 will be heard by the ~~Commissioner~~ Examiners-in-Chief on the 23rd day of December 1912.

It is the sixth case on the assignment for that day.

The hearings will commence at ~~two~~ one o'clock, and as soon as the argument in one case is concluded the succeeding case will be taken up.

If any party, or his attorney, shall not appear when the case is called, his right to an oral hearing will be regarded as waived.

The time allowed for arguments is as follows:

Ex parte cases, thirty minutes;
Motions, thirty minutes, each side;
Interference appeals, final hearing, one hour each side.

By special leave, obtained before the argument is commenced, the time may be extended.

The appellant shall have the right to open and conclude in interference cases, and in such case a full and fair opening must be made.

Briefs in interference appeals must be filed in accordance with the provisions of Rule 147.

Respectfully,

E. B. Moore
Commissioner of Patents.

To Church & Church Attys.
McGill Bldg.
Washington D.C.

To

UNITED STATES PATENT OFFICE.

In re application
Milo Hastings;
Serial No. 624,685;
Filed May 3, 1911;
Hatchery for the Eggs of Domestic Fowl.

Before the
BOARD OF EXAMINERS-in-CHIEF
on APPEAL.

---

BRIEF FOR APPLICANT.

The invention or discovery made by this applicant and which now seems so simple and obvious to the Primary Examiner is one which has only been developed as a result of years of study and effort. The problems confronting experimentors in the art of egg incubation have been studied from many different angles, some investigators holding the view that nature must be simulated in every possible way if satisfactory results are to be attained, and others believing that science can improve upon nature.

Many efforts have been made to carry on the incubation of eggs on an extensive scale, but as a rule such efforts have been unsuccessful, save in a few instances where climatic and atmospheric conditions have been exceptionally favorable (for example, the large incubating plants of Ancient Egypt). Other efforts to carry on incubation on an extensive scale have invariably failed, unless the operations have been sub-divided, so to speak, into a multiplicity of units, as, for example, by the

employment of a large number of relatively small incubators each practically independent of the other. The problem has been to enable the incubating operations to be carried on continuously, if so desired, with eggs at all stages of development, and with all of a vast number of eggs subjected to the same temperature and atmospheric conditions best adapted for the development of the embryo. An incubator such as is contemplated is in sharp contrast to the ordinary incubator in that it is designed to handle simultaneously hundreds of thousands of eggs and, therefore, requires a relatively large chamber for accommodating them. Plants actually constructed by applicant have been competent to handle from thirty thousand to one hundred and fifty thousand eggs and upwards at one time, for it is only by the handling of such large numbers of eggs that the expense of scientific handling and incubating operations can be reduced to a minimum.

In a small incubator holding from fifty to a few hundred eggs, the incubating chamber is of only a few cubic feet capacity and the eggs are almost invariably arranged in a single horizontal layer with which arrangement it becomes a comparatively simple matter to regulate the heat and moisture conditions, but should there be a failure to do so, the resultant loss would be quite insignificant. With a large hatchery, on the other hand, containing one hundred thousand eggs, for example, failure of a batch would mean financial ruin. While these considerations do not enter into the questions of invention and patentability to any great extent, attention is

directed to them in order that the Board may appreciate the situation confronting one who undertakes to accomplish the seemingly simple results necessary for successful incubation.

During the incubating process the eggs themselves, especially if assembled in large numbers close together, exert a most marked influence upon the surrounding air, both with respect to temperature and composition, and owing to their inherent temperature changes, they exert a most marked influence upon adjacent eggs due to radiation. For example, during the initial stage of incubation, the eggs absorb heat whereby their temperature is raised, but during the final stages, the vital processes generate heat and in practice it is found that with vast numbers of eggs assembled in a single compartment and with eggs at all stages of incubation but very little extraneous heat need be supplied, because the eggs in the later stages of development supply the necessary heat for the eggs in the earlier stages of development. In practice, however, a source of heat is always maintained in order to permit of proper regulation.

Insofar as moisture conditions are concerned, it seems to be a problem of maintaining the atmosphere at the proper degree of humidity to insure only a proper evaporation of the internal moisture of the eggs.

It is obvious that the conditions set up by the eggs themselves will produce temperature stratification in the egg chamber, and in additions emanations from the eggs of a gaseous nature will accentuate the stratification in the chamber. In a large collection of eggs in which

incubation has started the temperature at the center of the collection will be raised very much higher than the temperature nearer the bottom and sides of the collection, from which it appears very clear that the reason for the success of the small incubator with its single layer of eggs is due to the fact that with such a small egg chamber uniform conditions are more easily maintained and it is only necessary to watch the condition of the particular horizontal air stratum in which the eggs are located. Such ideal conditions cannot, however, be maintained in a large incubating chamber containing many superposed layers of eggs. The simple way in which applicant overcame the difficulty was through the provision of a mechanically operated air forcing means which would force a rapid circulation of air through the whole collection of eggs in the chamber and past the heater. The mechanical air forcing means is an essential factor, if heat is to be conserved and the conditions maintained uniform; for a circulation, which is due to differences in temperature in different portions of the circulatory system, as, for example, where the air is circulated by the effect of the heater in causing the heated air to rise and pass into or through the incubating chamber, will not answer for large collections of eggs. Its efficacy is doubtful even in a small incubator, for the reason that at the time when the circulation should be most active, i.e., during the final stages of development of the embryo, the embryo is itself generating the greatest quantity of heat, which will counteract the circulating tendency of the heater on the air. Furthermore in the incubating process during the final stages of the development the external heat supplied must be greatly reduced and this of itself would reduce the rate of circulation, and consequently, the heat and gaseous

stratification would be augmented rather than prevented. The claim of the application includes as its mechanical elements an incubating chamber adapted for the reception of superposed trays for eggs to be incubated, means for effecting a distribution of air uniformly to the eggs in the chamber, means for heating the air, and mechanically operated means for forcing a uniform circulation of air through all parts of the chamber and past the heater. It is through the instrumentality of these elements that the temperature and gaseous stratification of the air in the chamber is overcome, and the eggs are uniformly subjected to the influence of air of the same temperature and composition. In other words, regardless of the number of superposed layers of eggs in the chamber, each egg will be subjected to the conditions best calculated to promote the development of the embryo and it becomes a comparatively simple matter to regulate both the temperature, the humidity or the gaseous composition of the air, inasmuch as all of the air is drawn positively through a circulatory system and may be modified at any point during its circulation. By providing a forced circulation the influence of the eggs themselves becomes a negligible factor, a result which is impossible where temperature conditions are relied upon to effect the circulation and cause a uniform distribution of the air to the eggs.

In treating this subject, the inventor himself says:

"Large room hatcheries have been tried before and have failed because their builders did not know how to overcome the inequalities of temperature due to the convexion currents of air or gravity drafts set up within the chamber by the difference in temperature of walls, eggs, or other objects, and also because with dead air it was impossible to keep

large quantities of incubating eggs from overheating in the center of the mass. In the Hastings [illegible] temperature stratification is overcome by forcing through the hatching chamber a mechanically [illegible] blast of air. This rapidly moving air evenly distributed throughout the cross section of its movement by suitable gratings, results in a more even distribution of heat within a hatching chamber holding many thousands of eggs than is secured in a single egg tray of the most perfect dead air machine. In the practical plant the entire volume of air passes through the fan every thirty seconds.

"In the Hastings hatchery, a current of air is blown [illegible] every 30 at the rate of thirty feet [illegible] air [illegible] temperature of the eggs to [illegible] [illegible] [illegible]

seems to be helplessly confused in the minds of both incubator makers and users. The editor of Farm Poultry once criticised the writer for his theory concerning humidity on the grounds that it disagreed with the teachings of the U. S. Weather Bureau. The amusing fact of the incident was that shortly before Mr. Marvin, in charge of the humidity investigations of the Weather Bureau, had complimented the writer for his 'valuable contribution' to the science of humidity.

The moisture problem in incubation is only a matter of causing the correct amount of water to evaporate from the average egg. The function of the evaporation of a liquid into the air is dependent upon three factors; temperature, rate of air movement, and the saturation deficit, or difference between the vapor pressure (humidity) of the air and the vapor pressure of the liquid. With a gravity draft incubator the amount of air movement is dependent on external temperature while the saturation deficit is wholly determined by the humidity of the external air from whence the hatching chamber atmosphere is drawn. This introduces two weather variables into the problem and while it is theoretically possible to correct for these, in practice it is not. The Hastings Hatchery having a confined atmosphere and a uniform rate of air movement places the humidity problem under a ready control. Damp air may be dried with calcium chloride, if one has other reasons for not wishing to change the atmosphere. Because of the rapid air movement such artificial drying will rarely be necessary in American practice if the writer's experience in hatching during warm foggy weather on the Gulf Coast of Texas is a fair criterion.

The Dept. of Agriculture took out a patent on a very accurate moisture controlling device invented by the writer and, when desired, the Hatchery will be equipped with automatic humidifiers based on the same principle. The introduction of moisture from the mist spray nozzles in the fan boxes to increase humidity, or running in outside air to decrease it as indicated by dew weights or air cell shrinkage is sufficient for ordinary hatching practice."

There can be no question in regard to applicant having advanced this art, nor in regard to the value of the invention from an economic standpoint.

The references cited do not suggest the invention. They illustrate:

(a) systems whereby properly heated air may be forced into living rooms of buildings and into public vehicles, and allowed to escape through the ordinary cracks and openings or through openings especially provided for the purpose; and

(b) a small incubator in which there is an air circulating system in which a heater causes a difference in the specific gravity of the air in different portions of the system.

In the latter arrangement it will be noted the heat generated by the heater and by the eggs oppose and tend to prevent circulation with the result that during final stages of development when rapid circulation is most essential, the external heat must be reduced because the eggs are themselves generating heat and the circulation will be reduced to the minimum. In other words, with the system of the references the maintenance of uniform conditions would be impossible, where the number of eggs present is sufficient to have any influence on surrounding atmospheric conditions.

With regard to the Osborn patent, it will be noted that air stratification is the very object sought to be attained, see Osborn specification, page 1, lines 85-95 and 72-83; page 2, lines 8-17 and 36-38. There is no circulatory system but the air is discharged to the atmosphere, and this is also true of the car heater of the Hastings patent.

Respectfully,

MILO HASTINGS,

By Church & Church

His Attorneys.

December 30, 1913.

M.L.

Appeal No. 5565. U. S. PATENT OFFICE. March 11, 1913.

Before the Examiners-in-Chief, on Appeal.

Application of Milo Hastings for a patent for an improvement in Hatcheries for the Eggs of Domestic Fowl, filed May 3, 1911, Serial No. 624,865.

Messrs. Church & Church, attorneys for appellant.

This is an appeal from the action of the primary examiner finally rejecting the following claim:

"A hatchery for eggs embodying an incubating chamber adapted for the reception of superposed trays for eggs to be incubated, whereby said eggs will be arranged in layers one above the other, means for effecting a distribution of air uniformly to the eggs in the chamber, means for heating the air, and mechanically operated means for forcing a uniform circulation of air through all parts of the chamber and past the heater, whereby convexion currents will be eliminated, temperature and gaseous stratification of the air in the chamber overcome, and the eggs subjected to the influence of air of the same temperature and composition."

The references cited are:

Hawkins, 725,079, Apr. 14, 1903.
Osborne, 886,325, Apr. 28, 1908.

The device covered by this claim is an incubator which differs from the incubator shown in the patent to Bay, cited by the examiner, in that a mechanically operated fan is employed for the purpose of securing ventilation of the incubator, instead of relying upon the natural circulation caused by the lamp which supplies the heat. By reason of the employment of a fan for this purpose, the appellant contends that he is able to carry on the incubation of eggs much more perfectly, especially

f/33

when conducted upon a large scale. It is contended that if the natural circulation of the air due to the lamp be relied upon, the air in the incubator will become stratified, by reason of the different temperatures of the eggs, and that as eggs absorb heat during the first portion of the process of incubation, and give out heat during the latter portion thereof, the additional heat at the end of the process will tend to check the draft at the precise time when it is most needed, while in the case of the forced draft the constant circulation of air at the proper temperature and humidity can be readily supplied at all times. The original specification is very brief and makes it clear that the sole invention is in securing better ventilation and a more uniform temperature throughout the hatching chamber, by substituting a forced draft for gravity drafts.

The examiner cites the patent to Osborne and the patent to Hawkins, for the purpose of showing that forced draft for ventilating purposes is well known in the art of ventilation, and in view of this holds that there can be no invention in substituting the forced draft for the natural draft of the lamp, for the purpose of securing more perfect ventilation in an incubator.

The appellant in his brief lays great stress upon his alleged success in building and carrying on hatcheries upon a large scale, and this may all be true, but there is nothing in the claim which involves operation upon a large scale, the claim covering nothing more than would be found in the Bay incubator if a fan were supplied to give better ventilation, and, even if the idea of carrying out the operations on a large scale could in some way be included in the claim, it would not appear to change the situation, for it is not novel to operate on a large scale as is admitted in the brief, reference being made to incubator establishments which have been operated in Egypt. Also, large numbers of eggs have been incubated at the same time

in this country, but in those cases it is stated to have been accomplished by means of a number of separate incubators.

We find nothing which indicates that the appellant has taken advantage of any newly discovered principle in the incubation of eggs; for it was well known that eggs should be supplied with air at the proper temperature and the proper degree of humidity, and that the ventilation should be made as perfect as was consistent with the means employed. In operating with incubators of moderate capacity, it is apparently not necessary to ventilate as perfectly as it would be if the eggs were incubated in a single large apartment, but this only means that when operating on a large scale a system of ventilation should be employed which will operate perfectly and be applicable to the increased size of the plant, and it is well known that even in the ventilation of buildings the proper device for this purpose is to ventilate by means of a forced draft. We therefore believe that the examiner is right in holding that there is no invention in substituting forced draft for the natural draft in an incubator.

The decision of the examiner is affirmed.

Frank E. Stevens

Jacquin Reynolds

Examiners-in-Chief.

I agree with appellant that the claim is patentable.

F. G. Stevens

Examiner-in-Chief.

Appeal No. 5585 Paper No. 16

Notice of Decision

DEPARTMENT OF THE INTERIOR
UNITED STATES PATENT OFFICE
WASHINGTON

EXAMINER IN CHIEF
MAR 11 1903
U. S. PATENT OFFICE

Milo Hastings
c/o Church & Church, Attys.
McGill Bldg.
Washington, D.C.

Sir:

Inclosed find copy of decision this day rendered by the Examiners in Chief in the ex parte case of Milo Hastings — Serial No. 624,855.

By direction of the Commissioner:

Very respectfully,

W. F. Woolard,
Chief Clerk.

2-[illegible]

1911

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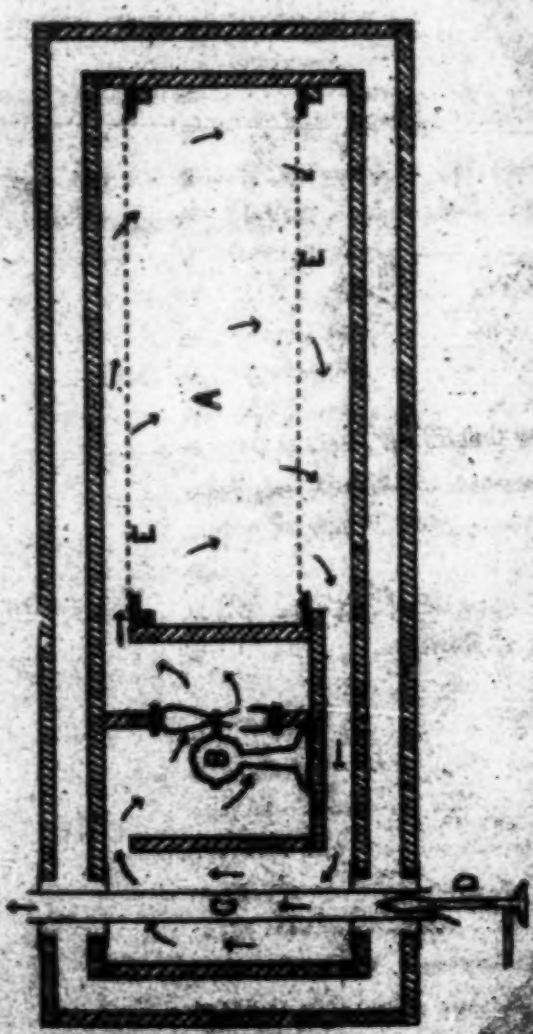


Witnesses:
Nyette B. Davis.
Ed E. Cockhoff

CLERK'S COPY.

# Vol. I

## TRANSCRIPT OF RECORD

## Supreme Court of the United States

OCTOBER TERM, 1936

## No. 36

SAMUEL B. SMITH, PETITIONER,

*vs.*

JAMES MANUFACTURING COMPANY AND ELMIRA HATCHERIES, INCORPORATED

ON WRIT OF CERTIORARI TO THE UNITED STATES CIRCUIT COURT OF APPEALS FOR THE SECOND CIRCUIT

PETITION FOR CERTIORARI FILED APRIL 21, 1936.

CERTIORARI GRANTED MAY 25, 1936.

# SUPREME COURT OF THE UNITED STATES

## OCTOBER TERM, 1936

# No. 36

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SAMUEL B. SMITH, PETITIONER,

*vs.*

JAMES MANUFACTURING COMPANY AND ELMIRA HATCHERIES, INCORPORATED

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ON WRIT OF CERTIORARI TO THE UNITED STATES CIRCUIT COURT OF APPEALS FOR THE SECOND CIRCUIT

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[fol. 1]

# IN THE UNITED STATES DISTRICT COURT, WESTERN DISTRICT OF NEW YORK

In Equity. No. 253

SAMUEL B. SMITH, Plaintiff,

vs.

JAMES MANUFACTURING COMPANY, Defendant

BILL OF COMPLAINT—Filed May 12, 1930

To the Honorable the Judges of the United States District Court for the Western District of New York:

Plaintiff represents and states as follows:

1. That the plaintiff, Samuel B. Smith, is a citizen of the United States and a resident of Cleveland, Ohio.

2. Upon information and belief that the defendant, the James Manufacturing Company, is a corporation of Wisconsin, and has and maintains a regularly established office and place of business at Elmira, Chemung County, New York, at which place it is engaged and doing business in the manufacture and/or sale of incubators for the hatching of eggs.

3. The jurisdiction of this Court depends upon the fact that this suit is one arising under the patent laws of the United States.

[fol. 2] 4. Upon information and belief that prior to October 26, 1916, the plaintiff, Samuel B. Smith, was the first, original and sole inventor of certain new and useful improvements in Incubators, not known or used by others before his invention or discovery thereof, not patented or described in any printed publication in this or any foreign country prior to his invention thereof or more than two years prior to October 26, 1916, not in public use or on sale in this country for more than two years prior to said date, not abandoned, and not patented by Samuel B. Smith or his legal representatives or assigns upon an application filed more than twelve months prior to said date.

5. On October 26, 1916, the plaintiff, Samuel B. Smith, filed in the United States Patent Office an application for Letters Patent of the United States for said improvement.

6. That prior to April 16, 1918, Samuel B. Smith assigned the right, title and interest in and to the said invention and in and to any United States patent to issue thereon to The Buckeye Incubator Company, a corporation of Ohio, and that after due proceedings upon the said application for patent there was issued to The Buckeye Incubator Company, aforesaid, United States Letters Patent No. 1,262,860 on April 16, 1918, whereby the exclusive right of making, using and selling the said invention and improvements throughout the United States for the term of said patent was granted to The Buckeye Incubator Company, aforesaid, its successors or assigns, as will more fully appear from the original or duly certified copies of the said patent [fol. 3] and assignment, to be produced in Court herein.

7. That under date of April 29, 1927, The Buckeye Incubator Company, aforesaid, being then the owner of the title in and to the aforesaid Letters Patent, did sell, assign and transfer to the plaintiff, Samuel B. Smith, his heirs and assigns, the right, title and interest in and to the said Letters Patent as will more fully appear from the original assignment or duly certified copy thereof to be produced in Court herein.

8. That the plaintiff and his predecessor in title, The Buckeye Incubator Company, have been at all times the sole and exclusive owners of the said patent.

9. That the said patented invention has proven to be of very great value, that the plaintiff has expended large sums of money in the manufacture and sale of incubators embodying the invention thereof, that the incubators so manufactured and sold have acquired a high reputation and utility and have proven to possess superior functions and qualities over other incubators, that the said patent has been widely recognized and respected, and that the validity of said patent has been established in litigations arising thereunder in various Circuit Courts of Appeal and District Courts of the United States.

10. That incubators manufactured and sold by the plaintiff have been marked "Patented" together with the date

and number of the patent aforesaid as required by the Statutes of the United States, and that in addition the de-
[fol. 4] fendant herein has been duly notified in writing of the patent aforesaid and of its infringement thereof.

11. Upon information and belief that the defendant prior to and not more than six years before the filing of the Bill of Complaint herein, has been engaged at Elmira, New York, in the manufacture and/or sale of incubators for the hatching of eggs, which said incubators embody the invention of said patent No. 1,262,860, and particularly claim 5 thereof, and is selling or offering for sale such incubators, thereby inciting and contributing toward the infringement by others of the process of hatching eggs as set forth in claims 1, 2 and 3 of the said patent, and is threatening to continue such acts, whereby the rights of the plaintiff as secured by the said patent are infringed, all without the license or consent of the plaintiff.

12. That by reason of the infringement complained of herein, the plaintiff has suffered and is suffering irreparable loss and damage and the defendant has realized profits and gains which of right belong to the plaintiff, and will continue to do so unless restrained by this Court.

Wherefore, the plaintiff prays:

1. That a writ of subpœna may issue out of this Court directed to the defendant, the James Manufacturing Company, commanding it to appear and answer all and singular the matters and things herein complained of, but not under oath, an answer under oath being expressly waived.

2. That temporary and permanent injunctions be issued out of this Court addressed to the defendant, the James
[fol. 5] Manufacturing Company, and its workmen, employees, solicitors, agents, attorneys and others claiming or holding under the defendant, enjoining and restraining them from in any manner directly or indirectly infringing upon or contributing to the infringement of the patent sued upon herein.

3. That the defendant be required to account for and pay to the plaintiff all the gains and profits acquired by it and recompense the plaintiff for the damages sustained by

the plaintiff by reason of the infringement complained of herein.

4. That the defendant pay the costs of this suit, and that such other further and equitable relief be granted to the plaintiff as shall be found necessary or proper.

Samuel B. Smith, by Charles W. Parker, His Solicitor. Charles W. Parker, A. L. Ely, of Counsel.

*Duly sworn to by Samuel B. Smith. Jurat omitted in printing.*

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[fol. 6] IN THE UNITED STATES DISTRICT COURT

[Title omitted]

ANSWER—Filed July 11, 1930

The above named defendant, James Manufacturing Company, by its attorneys, for answer to the Bill of Complaint in the above entitled cause, says:

[fol. 7] 1. Defendant admits that it is a Wisconsin Corporation. Its principal office and place of business is at Fort Atkinson, Jefferson County, Wisconsin, at which place its incubators are manufactured. Defendant admits that it has a regularly established office and place of business at Elmira, New York, and that some of its incubators are sold or delivered to purchasers from that place, but denies that any incubators are being made, or have been made, at Elmira.

2. Defendant admits the grant of Letters Patent of the United States to The Buckeye Incubator Company numbered 1,262,860 and dated April 16, 1918, on an application filed by the plaintiff.

3. Defendant is without knowledge as to whether the subject matter of said Letters Patent had been patented or caused to be patented by the plaintiff on an application filed in a foreign country more than twelve months prior to his application for said patent in this country.

4. Defendant is without knowledge as to whether The Buckeye Incubator Company, aforesaid, ever sold, assigned or transferred to the plaintiff, or to his heirs or assigns, any right, title or interest in and to said Letters Patent.

5. Defendant is without knowledge as to whether the plaintiff, and/or The Buckeye Incubator Company, have been at all times, or whether they, or either of them, now are the sole or exclusive owners of said Letters Patent, or as to whether the plaintiff is the owner of any part thereof.

[fol. 8] 6. Defendant is without knowledge as to whether all incubators manufactured and sold by the plaintiff and/or by others acting under its authority, as set forth in the Bill of Complaint, have been marked patented, together with the date and number of said Letters Patent, and is without knowledge as to whether the plaintiff has in any way conformed to the requirements of the Statutes as to the marking of its incubators.

7. Defendant admits that on or about the 17th day of April, 1930, it received a notice of said Letters Patent from Messrs. Ely and Barrow, reciting that they were acting for the plaintiff and charging that the incubators made and sold by defendant were believed to infringe some of the claims thereof, but without specifying which claims were believed to have been infringed. Defendant says that before it could investigate or place itself in a position to act intelligently with respect to said charge, to-wit,—on or about the 13th day of May, 1930, it received a further notice from them stating that a suit was being commenced, a Bill of Complaint having been prepared and forwarded to the Western District of New York for service; that prior to the commencement of this suit defendant was given no other notice and no opportunity to take any intelligent action respecting plaintiff's charge of infringement.

8. Defendant denies all allegations contained in paragraph numbered four of the Bill of Complaint with reference to prior knowledge and use of the alleged improvements set forth in said Letters Patent; the existence of [fol. 9] prior patents therefor; the description thereof in printed publications; the public use; the placing on sale; the patenting or published description thereof more than two years prior to the plaintiff's said application; and the abandonment of said alleged invention.

9. Defendant denies that any invention of the plaintiff is disclosed or covered by, or claimed in said Letters Patent, and denies that anything embodying an invention made

by the plaintiff has ever been made, used, or sold by the defendant.

10. Defendant denies that it has ever been engaged in the manufacture, sale or use of incubators which embody any invention of said Letters Patent numbered 1,262,860 or purporting to be described and claimed therein, and denies that it has in any way infringed, or incited or contributed to any infringement by others, of the alleged method of hatching eggs as set forth in claims 1 or 2 or 3 of said Letters Patent, and further denies that it has ever made or sold or used, or contributed to the manufacture, sale or use of incubators made in accordance with claim 5 of said Letters Patent, and denies that it has ever intended or threatened to infringe said Letters Patent.

11. Defendant is informed and admits that the plaintiff has expended large sums of money in the manufacture and sale of incubators made in general accordance with the drawings and specification of said Letters Patent, but defendant denies that the alleged invention claimed [fol. 10] thereby has proven to be of value and denies that such incubators have acquired a high reputation or recognition of utility except as to features common to other incubators designed and marketed prior to the said alleged invention of the plaintiff, and denies that the plaintiff's said incubators possess superior qualities and/or functions over other incubators previously designed and marketed as aforesaid, and denies that said patent has been widely recognized and respected. Defendant is informed and believes and therefore avers that said Letters Patent have been generally disregarded and believed to be either invalid or limited to the precise features shown and described therein. Defendant is without knowledge as to profits made by the plaintiff from the manufacture and sale of incubators, as alleged in the Bill of Complaint but defendant is informed and verily believes and therefore says that said The Buckeye Incubator Company has been adjudicated a bankrupt, that a receiver in bankruptcy was duly appointed and that its assets have been sold to a purchaser who intends to continue the business of manufacturing incubators but not under any authority derived from the plaintiff.

12. Defendant is informed and admits that the plaintiff has instituted suits in various District Courts of the United States charging others with having infringed said Letters Patent, but denies that the validity thereof has been established by any decrees except as against servile imitations by persons who had also been guilty of inequitable conduct, and as against persons who had been guilty of [fol. 11] unfair competitive tactics whereby they had forfeited their standing in Court. Defendant is informed and believes and therefore avers that except for such decrees and others obtained by consent or settlement the plaintiff has been unsuccessful in litigation, and that in all such suits heretofore tried, contesting defendants who were not servile imitators and not guilty of unfair competition, were successful in their defenses, and that decrees have been entered in such cases, construing and limiting the claims of said Letters Patent to substantially the exact method and structure shown and described therein, and to a method and a structure not used by this defendant.

Further answering, defendant says:

13. That the alleged method purporting to be patented in and by the claims numbered 1, 2 and 3 of the plaintiff's said Letters Patent numbered 1,262,860 is not patentable under the laws of the United States for the reason that said claims set forth and attempt to monopolize merely the functions of the plaintiff's incubator as shown in the drawings and described in the specification of said patent.

14. That the alleged method as set forth in the claims numbered 1, 2 and 3 of the plaintiff's said patent and in each of them, is limited to the functions and mode of operation which the plaintiff's incubator as set forth in claim 5 of said patent is intended and designed to perform and that the incubator set forth in said claim 5 is essential to said mode of operation and to the performance of said functions; that in defendant's incubators such a mode of [fol. 12] operation is not possible and such functions are not and cannot be performed in the manner set forth in said claims 1, 2 and 3, or in any of them, and that therefore, said defendant's incubator is not equivalent for the plaintiff's incubator as set forth in his said patent in suit and is not an infringement of said Letters Patent.

15. Defendant is informed and believes and therefore avers that in the course of the prosecution in the United States Patent Office of the plaintiff's application for the Letters Patent in suit numbered 1,262,860 such proceedings were had and such representations, admissions, recantations and disclaimers made in behalf of the plaintiff and such interpretations of the claims involved in this suit were made in his behalf and for the purpose of procuring the grant of said Letters Patent, that the plaintiff became and now is estopped to assert that such claims cover or monopolize or patent the subject matter of any incubator made, sold or used by defendant.

16. That in view of the state of the art existing prior to the alleged invention by Samuel B. Smith of the subject matter of said Letters Patent No. 1,262,860 the said patent, if valid, must be construed and limited to the precise method and structure disclosed in the drawings and description of said Letters Patent and that none of the claims of said Letters Patent cover or were intended to cover any incubator sold by the defendant and that none of the incubators made and sold by the defendant are embraced within the claimed subject matter of said Letters Patent but that defendant's incubators and each of them [fol. 13] are different in structure and design and are capable of no mode of operation or method invented by the plaintiff, and that defendant's incubators are not either in structure or in method of use an equivalent for or an embodiment of anything invented by the plaintiff or which the plaintiff has any lawful right to monopolize in and by the patent in suit.

17. Defendant is informed and believes and therefore avers that the claims 1, 2, 3 and 5 of the patent in suit numbered 1,262,860 have been construed and limited by judicial interpretation and adjudication in suits against other manufacturers of incubators and that, as so construed and limited, nothing contained in defendants' incubators or in any mode of operation thereof of which the same are capable, is an infringement of said claims or of any of them, or of said Letters Patent.

18. Defendant is informed and believes and therefore avers that said alleged invention purporting to be patented in and by said Letters Patent numbered 1,262,860 was

abandoned by said Samuel B. Smith, by the manufacture and public use of such incubators for purposes other than experimentation, for a period of more than two years prior to the filing of his said application.

19. This defendant further says that said Letters Patent are ineffective to claim or monopolize anything made by this defendant for the reason that the same as to all features and combinations of features disclosed in said Letters Patent and also found in defendant's incubator are mere [fol. 14] aggregations of features and elements and combinations of features and of elements common to the prior art and known to and used by manufacturers of incubators generaly prior to the alleged invention thereof by the plaintiff and more than two years prior to his said application and that no invention was required to so aggregate them in a single incubator and no new result was obtained by so doing.

Further answering, this defendant says:

20. Defendant is informed and believes and therefore avers that the Letters Patent in suit numbered 1,262,860 are null and void and have no force and effect whatsoever for the reason that the alleged invention or improvement described and attempted to be claimed and monopolized in and by said Letters Patent and every material and substantial part thereof, was shown and described and patented and shown disclosed and described in printed publications prior to the alleged invention or discovery thereof by said Samuel B. Smith in and by the following specified Letters Patents and publications, to-wit:

United States Letters Patent

| Number | Date | Inventor | Title |
|---|---|---|---|
| 3,019 | Mar. 30, 1843 | Napoleon E. Guerin... | Egg Hatching Apparatus |
| 240,004 | Apr. 12, 1881 | Paul H. Bate..... | Refrigerator |
| 535,961 | Feb. 9, 1896 | Edw. G. Renwich..... | Incubator |
| 547,946 | Aug. 24, 1896 | Jacob K. Meschter.... | Incubator |
| 540,107 | May 28, 1895 | Norman McAslan..... | Incubator |
| 553,723 | Jan. 28, 1896 | Josiah K. Proctor..... | Apparatus for Ordering Tobacco |
| [fol. 15] | | | |
| 559,260 | Apr. 28, 1896 | John T. Butts..... | Incubator |
| 605,806 | June 14, 1898 | Joseph McCreery..... | Ventilating System |
| 656,760 | Aug. 28, 1900 | Granville T. Woods.... | Incubator |

United States Letters Patent—Continued

| Number | Date | Inventor | Title |
|---|---|---|---|
| 691,837 | Jan. 28, 1902 | Virgil S. Bell..... | Incubator |
| 780,912 | Jan. 24, 1905 | Wm. H. Phillips..... | Incubator |
| 789,719 | May 16, 1905 | John H. Day..... | Incubator |
| 828,181 | Aug. 7, 1906 | Geo. H. Boyd..... | Incubator |
| 843,909 | Feb. 12, 1907 | F. M. Peters et al..... | Atmosphere Reg. System |
| 891,019 | June 16, 1908 | Luigi Verna ..... | Drying Room |
| 917,483 | Apr. 6, 1909 | C. C. Peck..... | Automotic Fan System, etc. |
| 951,660 | Mar. 8, 1910 | Wm. Miller ..... | Machine for Treating Tobacco |
| 1,137,752 | May 4, 1915 | Geo. E. Goldstein..... | Apparatus for Curing, etc. |
| 1,165,958 | Dec. 28, 1915 | Thos. B. Freas..... | Heating System |
| 1,205,445 | Nov. 21, 1916 | Roy F. Fullington..... | Incubator Attachment |
| 10,288 (German) | (British) 1887 | John Gardner..... | Improvements in and relating to incubators |
| 155,917 | Nov. 11, 1904 | E. Stulik ..... | Incubator |

Publications

"The Dollar Hen" by Milo Hastings, Published 1909 by The Arcadia Press, New York City, Pages 77 to 107, inclusive.

"Poultry Culture", Topeka, Kansas, Issue of February, 1912, Article entitled "The Mammoth Incubator Outmammothed."

"Boston Sunday Globe", Boston, Mass., Issue of November 10, 1912, Article entitled "Indoor Chicken Factories."

[fol. 16] "Technical World", Chicago, Ill., Issue of April, 1933, Article entitled "Hatching Chickens by Wholesale".

And by various other prior patents and publications not now known to this defendant but which this defendant prays leave to insert in this answer by suitable amendment when ascertained.

21. Defendant is informed and believes and therefore avers that said Letters Patent numbered 1,262,860 are null and void and have no force and effect because in this country, prior to any date of the alleged invention thereof by Samuel B. Smith and for more than two years prior to the date of said application, devices, towit, incubators embody-

ing the alleged invention and every substantial and material part thereof were manufactured, placed on sale, sold and/or publicly used by the persons and at their places of address mentioned in the patents and publications listed in the foregoing paragraph numbered 20 hereof and by the following persons whose names and addresses are hereby given as follows, to-wit:

Walter B. Davis, and Milo Hastings, at Kings Highway & 23rd St., Brooklyn, New York.

John Lieber, and Milo Hastings, at Muskogee, Oklahoma.

E. T. Powers, and Milo Hastings, at Port O'Connor, Texas.

[fol. 17] Chas. A. Cyphers, at Philadelphia, Pa. Stroudsburg, Pa.

Rolla Lawry, at Pacific, Mo.

And by various other persons whose names and addresses are not now known to defendant but which it prays leave to give and mention in this answer by amendment hereto, when ascertained.

22. Defendant is informed and believes and therefore avers that said Samuel B. Smith was not the first inventor of anything embodied in defendant's incubator nor of any method of use practiced or caused or intended by the defendant to be practiced but that each and all features of method or of structure employed by defendant and also disclosed in said Letters Patent 1,262,860 were invented, perfected, discovered and/or designed by each of the several patentees and persons above named in paragraphs numbered 20 and 21 hereof, at their respective addresses as given in their said patents, and set opposite their respective names in paragraph 21, all of whom were each continuously diligent in adapting and perfecting his incubators embodying such improvements or inventions and in reducing the same to practice from a date prior to any date of the alleged invention thereof by Samuel B. Smith and prior to any date following which said Samuel B. Smith was diligent in the completion of his alleged invention and that said Letters Patent are therefore ineffective to lawfully claim and monopolize any method or structure used by the defendant or intended or caused by the defendant to be used.

[fol. 18] 23. Defendant further says that said Letters Patent are null and void and ineffective to lawfully claim and monopolize any method or structure used by the defendant for the reason that the plaintiff failed to comply with the Statutes in such case made and provided, in that the written description of said alleged invention and of the manner and process of making, constructing and using it was not set forth in the plaintiffs application for said Letters Patent and is not set forth in said Letters Patent in such full, clear, concise and exact terms as to enable any person skilled in the art or science to which it appertains or with which it is most nearly connected, to make, construct and use the same, and the alleged principle thereof and the best contemplated mode of applying that principle was not explained in the plaintiff's said application and is not explained in said Letters Patent so as to distinguish the alleged invention from other inventions, and that said application did not, and said Letters Patent do not, particularly point out and/or distinctly claim in said claims 1, 2, 3 and 5 thereof, or in any of them, the part, improvement or combination of parts which the plaintiff claimed or now claims as his invention or discovery.

24. Defendant further says that all elements, features, and combinations of features common to the incubator disclosed in the plaintiff's said patent and to this defendant's incubators, are also common to the incubators disclosed in the prior patents and publications aforesaid and prior to the said alleged invention of the plaintiff were commonly known to and used by the public generally and are not and [fol. 19] cannot lawfully be covered or monopolized by said Letters Patent numbered 1,262,860.

Wherefore the defendant avers that the plaintiff is entitled to no relief whatever and prays that the Bill of Complaint be dismissed, with costs to be taxed against the plaintiff.

Dated July 11, 1930.

James Manufacturing Co., by John S. Powers, Harold I. Popp, Defendant's Solicitors. S. L. Wheeler, W. G. Wheeler, per S. L. W. Leverett C. Wheeler, of Counsel for Defendant.

IN THE UNITED STATES DISTRICT COURT

[Title omitted]

AMENDED ANSWER—Filed September 17, 1932

The above named defendant, James Manufacturing Company, by its attorneys, for answer to the Bill of Complaint [fol. 20] in the above entitled cause, says:

1. Defendant admits that it is a Wisconsin corporation. Its principal office and place of business *it as* Fort Atkinson, Jefferson County, Wisconsin, at which place its incubators are manufactured. Defendant admits that it has a regularly established office and place of business at Elmira, New York, and that some of its incubators are sold or delivered to purchasers from that place, but denies that any incubators are being made, or have been made, at Elmira.

2. Defendant admits the grant of Letters Patent of the United States to The Buckeye Incubator Company numbered 1,262,860 and dated April 16, 1918, on an application filed by the plaintiff.

3. Defendant is without knowledge as to whether the subject matter of said Letters Patent had been patented or caused to be patented by the plaintiff on an application filed in a foreign country more than twelve months prior to his application for said patent in this country.

4. Defendant is without knowledge as to whether The Buckeye Incubator Company, aforesaid, ever sold, assigned or transferred to the plaintiff, or to his heirs or assigns, any right, title or interest in and to said Letters Patent.

5. Defendant is without knowledge as to whether the plaintiff, and/or The Buckeye Incubator Company, have [fol. 21] been at all times, or whether they, or either of them, now are the sole or exclusive owners of said Letters Patent, or as to whether the plaintiff is the owner of any part thereof.

6. Defendant is without knowledge as to whether all incubators manufactured and sold by the plaintiff and/or by others acting under its authority, as set forth in the Bill of Complaint, have been marked patented, together with the

date and numbers of said Letters Patent, and is without knowledge as to whether the plaintiff has in any way conformed to the requirements of the Statutes as to the marking of its incubators.

7. Defendant admits that on or about the 17th day of April, 1930, it received a notice of said Letters Patent from Messrs. Ely and Barrow, reciting that they were acting for the plaintiff and charging that the incubators made and sold by defendant were believed to infringe some of the claims thereof, but without specifying which claims were believed to have been infringed. Defendant says that before it could investigate or place itself in a position to act intelligently with respect to said charge, to-wit,—on or about the 13th day of May, 1930, it received a further notice from them, stating that a suit was being commenced, a Bill of Complaint having been prepared and forwarded to the Western District of New York for service; that prior to the commencement of this suit defendant was given no other notice and no opportunity to take any intelligent action respecting plaintiff's charge of infringement.

[fol. 22] 8. Defendant denies all allegations contained in paragraph numbered four of the Bill of Complaint with reference to prior knowledge and use of the alleged improvements set forth in said Letters Patent; the existence of prior patents therefor; the description thereof in printed publications; the public use; the placing on sale; the patenting or published description thereof more than two years prior to the plaintiff's said application; and the abandonment of said alleged invention.

9. Defendant denies that any invention of the plaintiff is disclosed or covered by, or claimed in said Letters Patent, and denies that anything embodying an invention made by the plaintiff has ever been made, used, or sold by the defendant.

10. Defendant denies that it has ever been engaged in the manufacture, sale or use of incubators which embody any invention of said Letters Patent numbered 1,262,860 or purporting to be described and claimed therein, and denies that it has in any way infringed, or incited or contributed to any infringement by others, of the alleged method of hatching eggs as set forth in claims 1 or 2 or 3 of said Letters Patent, and further denies that it has ever

made or sold or used, or contributed to the manufacture, sale or use of incubators made in accordance with claim 5 of said Letters Patent, and denies that it has ever intended or threatened to infringe said Letters Patent.

11. Defendant is informed and admits that the plaintiff has expended large sums of money in the manufacture and [fol. 23] sale of incubators made in general accordance with the drawings and specification of said Letters Patent, but defendant denies that the alleged invention claimed thereby has proven to be of value and denies that such incubators have acquired a high reputation or recognition of utility except as to features common to other incubators designed and marketed prior to the said alleged invention of the plaintiff, and denies that the plaintiff's said incubators possess superior qualities and/or functions over other incubators previously designed and marketed as aforesaid, and denies that said patent has been widely recognized and respected. Defendant is informed and believes and therefore avers that said Letters Patent have been generally disregarded and believed to be either invalid or limited to the precise features shown and described therein. Defendant is without knowledge as to profits made by the plaintiff from the manufacture and sale of incubators, as alleged in the Bill of Complaint but defendant is informed and verily believes and therefore says that said The Buckeye Incubator Company has been adjudicated a bankrupt, that a receiver in bankruptcy was duly appointed and that its assets have been sold to a purchaser who intends to continue the business of manufacturing incubators but not under any authority derived from the plaintiff.

12. Defendant is informed and admits that the plaintiff has instituted suits in various District Courts of the United States charging others with having infringed said Letters Patent, but denies that the validity thereof has been estab- [fol. 24] lished by any decrees except as against servile imitations by persons who had also been guilty of inequitable conduct, and as against persons who had been guilty of unfair competitive tactics whereby they had forfeited their standing in Court. Defendant is informed and believes and therefore avers that except for such decrees and others obtained by consent or settlement the plaintiff has been unsuccessful in litigation, and that in all such suits heretofore tried, contesting defendants who were not

servile imitators and not guilty of unfair competition, were successful in their defenses, and that decrees have been entered in such cases, construing and limiting the claims of said Letters Patent to substantially the exact method and structure shown and described therein, and to a method and a structure not used by this defendant.

Further answering, Defendant says:

13. That the alleged method purporting to be patented in and by the claims numbered 1, 2 and 3 of the plaintiff's said Letters Patent numbered 1,262,860 is not patentable under the laws of the United States for the reason that said claims set forth and attempt to monopolize merely the functions of the plaintiff's incubator as shown in the drawings and described in the specification of said patent.

14. That the alleged method as set forth in the claims numbered 1, 2 and 3 of the plaintiff's said patent and in each of them, is limited to the functions and mode of operation which the plaintiff's incubator as set forth in claim 5 of said patent is intended and designed to perform and that [fol. 25] the incubator set forth in said claim 5 is essential to said mode of operation and to the performance of said functions; that in defendant's incubators such a mode of operation is not possible and such functions are not and cannot be performed in the manner set forth in said claims 1, 2 and 3, or in any of them, and that therefore, said defendant's incubator is not equivalent for the plaintiff's incubator as set forth in his said patent in suit and is not an infringement of said Letters Patent.

15. Defendant is informed and believes and therefore avers that in the course of the prosecution in the United States Patent Office of the plaintiff's application for the Letters Patent in suit numbered 1,262,860 such proceedings were had and such representations, admission, recantations and disclaimers made in behalf of the plaintiff and such interpretations of the claims involved in this suit were made in his behalf and for the purpose of procuring the grant of said Letters Patent, that the plaintiff became and now is estopped to assert that such claims cover or monopolize or patent the subject matter of any incubator made, sold or used by defendant.

16. That in view of the state of the art existing prior to the alleged invention by Samuel B. Smith of the subject

matter of said Letters Patent No. 1,262,860 the said patent, if valid, must be construed and limited to the precise method and structure disclosed in the drawings and description of said Letters Patent and that none of the claims of said Letters Patent cover or were intended to cover any incubator [fol. 26] sold by the defendant and that none of the incubators made and sold by the defendant are embraced within the claimed subject matter of said Letters Patent but that defendant's incubators and each of them are different in structure and design and are capable of no mode of operation or method invented by the plaintiff, and that defendant's incubators are not either in structure or in method of use an equivalent for or an embodiment of anything invented by the plaintiff or which the planitiff has any lawful right to monopolize in and by the patent in suit.

17. Defendant is informed and believes and therefore avers that the claims 1, 2, 3 and 5 of the patent in suit numbered 1,262,860 have been construed and limited by judicial interpretation and adjudication in suits against other manufacturers of incubators and that, as so construed and limited, nothing contained in defendant's incubators or in any mode of operation thereof of which the same are capable, is an infringement of said claims or of any of them, or of said Letters Patent.

18. Defendant is informed and believes and therefore avers that said alleged invention purporting to be patented in and by said Letters Patent numbered 1,262,860 was abandoned by said Samuel B. Smith, by the manufacture and public use of such incubators for purposes other than experimentation, for a period of more than two years prior to the filing of said application.

19. This defendant further says that said Letters Patent [fol. 27] are ineffective to claim or monopolize anything made by this defendant for the reason that the same as to all features and combinations of features disclosed in said Letters Patent and also found in defendant's incubator are mere aggregations of features and elements and combinations of features and of elements common to the prior art and known to and used by manufacturers of incubators generally prior to the alleged invention thereof by the plaintiff

and more than two years prior to his said application and that no invention was required to so aggregate them in a single incubator and no new result was obtained by so doing.

Further answering, this defendant says:

20. Defendant is informed and believes and therefore avers that the Letters Patent in suit number 1,262,860 are null and void and have no force and effect whatsoever for the reason that the alleged invention or improvement described and attempted to be claimed and monopolized in and by said Letters Patent and every material and substantial part thereof, was shown and described and patented and shown disclosed and described in printed publications prior to the alleged invention or discovery thereof by said Samuel B. Smith in and by the following specified Letters Patents and publications, to-wit:

United States Letters Patent

| Number | Name | Date |
|---|---|---|
| 3,019 | Napoleon E. Guerin | Mar. 30, 1843 |
| 240,004 | Paul H. Bate | Apr. 12, 1881 |
| 335,961 | Edw. G. Renwich | Feb. 9, 1886 |

[fol. 28]

| | | |
|---|---|---|
| 347,946 | Jacob K. Meschter | Aug. 24, 1886 |
| 540,107 | Norman McAslan | May 28, 1895 |
| 553,723 | Josiah K. Proctor | Jan. 28, 1896 |
| 559,260 | John T. Butts | Apr. 28, 1896 |
| 605,806 | Joseph McCreery | June 14, 1898 |
| 656,760 | Granville T. Woods | Aug. 28, 1900 |
| 691,837 | Virgil S. Bell | Jan. 28, 1902 |
| 780,912 | Wm. H. Phillips | Jan. 24, 1905 |
| 789,719 | John M. Day | May 16, 1905 |
| 828,181 | Geo. H. Boyd | Aug. 7, 1906 |
| 843,909 | F. M. Peters, et al. | Feb. 12, 1907 |
| 891,019 | Luigi Verna | June 16, 1908 |
| 917,483 | C. C. Peck | Apr. 6, 1909 |
| 951,650 | Wm. Miller | Mar. 8, 1910 |
| 1,137,752 | Geo. E. Goldstein | May 4, 1915 |
| 1,165,958 | Thos. B. Freas | Dec. 28, 1915 |
| 1,205,445 | Roy F. Fullington | Nov. 21, 1916 |
| 4,991 | Hawley | July 16, 1872 |
| Re. 11,460 | Proctor | Dec. 25, 1894 |

United States Letters Patent—Continued

| Number | Name | Date |
|---|---|---|
| 152,644 | Jones, et al. | June 30, 1874 |
| 165,121 | Reynolds | June 29, 1875 |
| 280,490 | Lumpp | July 3, 1883 |
| 286,756 | Winkler | Oct. 16, 1883 |
| 410,110 | Knowles, et al. | Aug. 27, 1889 |
| 426,321 | Proctor | Apr. 22, 1890 |
| 432,282 | Proctor | July 15, 1890 |
| 535,175 | Schwartz | Mar. 5, 1895 |
| 770,967 | Iden | Sept. 27, 1904 |
| 798,697 | Perkins | Sept. 5, 1905 |
| 915,412 | Cherry | Mar. 16, 1909 |
| 1,010,809 | Schmidt, et al. | Dec. 5, 1911 |
| 1,017,713 | Vaughan | Feb. 20, 1912 |
| 1,096,708 | Furley | May 12, 1914 |
| 1,144,232 | Osborn | June 22, 1915 |
| 1,166,311 | Bales | Dec. 28, 1915 |

[fol. 29]

| | | |
|---|---|---|
| 1,270,900 | Viviano | July 2, 1918 |
| 1,086,903 | Domenica | Feb. 10, 1914 |
| 493,467 | Baker | Mar. 14, 1893 |
| 1,034,205 | Cogburn | July 30, 1912 |
| 1,960 | Nyce | May 16, 1865 |
| 712,007 | Schiff | Oct. 28, 1902 |
| 40,148 | Smith | Sept. 29, 1863 |
| 143,912 | Kirby | Oct. 21, 1873 |
| 219,975 | Paresetti | Sept. 23, 1879 |
| 1,086,567 | Stone | Feb. 10, 1914 |
| 535,982 | Emerson | Mar. 19, 1895 |
| 664,751 | Hollingsworth | Feb. 25, 1900 |
| 1,160,793 | Van Keuren | Nov. 16, 1915 |
| 992,622 | Wiebe | May 16, 1911 |
| 832,151 | Newsom | Oct. 2, 1906 |
| 614,493 | Newsom | Nov. 22, 1898 |
| 339,837 | Barnes | Apr. 13, 1886 |
| 1,087,995 | Sturtevant | Feb. 24, 1914 |
| 271,184 | Altenbrand | Jan. 23, 1883 |
| 84,190 | Hosmer | Nov. 17, 1868 |
| 95,075 | Bundley | Sept. 21, 1869 |
| 530,051 | Moore | Nov. 27, 1894 |
| 29,775 | Randall | June 19, 1860 |

## United States Letters Patent—Continued

| Number | Name | Date |
|---|---|---|
| 300,118 | Parker | Mar. 23, 1909 |
| 916,273 | Coons | |
| 754,749 | Cooper | Aug. 2, 1870 |
| 105,891 | Blake | Oct. 28, 1884 |
| 307,116 | Jennings | Apr. 29, 1884 |
| 297,676 | Conant | Apr. 28, 1908 |
| 886,325 | Osborne | Aug. 21, 1917 |
| 1,237,874 | Martini | June 7, 1859 |
| 24,325 | Neubauer, et al. | Sept. 14, 1909 |
| 934,274 | Bradley | Oct. 22, 1895 |
| 548,573 | Moller, et al. | Aug. 11, 1874 |
| 153,948 | Haight | |

[fol. 30]

| | | |
|---|---|---|
| 330,457 | Bassini, et al. | July 2, 1886 |
| 709,650 | Scott | Jan. 9, 1903 |
| 916,454 | Koons | May 1, 1909 |
| 1,119,090 | Madary | Jan. 18, 1915 |
| 786,256 | Axford | Apr. 4, 1905 |
| 874,696 | McCarty | Dec. 24, 1907 |
| 1,277,530 | Barba | Sept. 3, 1918 |
| 1,284,611 | Crumpton | Nov. 12, 1918 |
| 1,263,138 | Smith | Apr. 16, 1918 |
| 1,158,447 | Coleman | Nov. 2, 1915 |
| 1,100,368 | George | June 16, 1914 |
| 787,671 | Jacobson | Apr. 18, 1905 |
| 1,231,112 | Allison | June 26, 1917 |
| 305,065 | Enggren | Sept. 16, 1884 |
| 115,564 | Briggs | June 6, 1871 |
| 410,017 | Phillips | Aug. 27, 1889 |
| 345,236 | Jordan | July 6, 1886 |
| 263,584 | Rice | Aug. 29, 1882 |
| 32,597 | Duncan | June 18, 1861 |
| 1,214,053 | Mendenhall | Jan. 30, 1917 |
| 797,689 | Kellogg | Aug. 22, 1905 |
| 676,950 | Hawkins | June 25, 1901 |
| 206,389 | Clegg | July 30, 1878 |
| 1,237,874 | De Martini | Aug. 21, 1917 |
| 1,225,382 | Wells | May 8, 1917 |
| 758,695 | Riotte | May 3, 1904 |
| 198,422 | Smith | Dec. 18, 1877 |

## United States Letters Patent—Continued

| Number | Name | Date |
|---|---|---|
| 449,231 | Phillips | Mar. 31, 1891 |
| 596,386 | Smith | Dec. 28, 1897 |
| 571,424 | Wolfe | Nov. 17, 1896 |
| 44,324 | Lippy, et al. | Sept. 20, 1864 |
| 173,016 | Jones | Feb. 1, 1876 |
| 1,198,604 | Tegoli | Sept. 19, 1916 |
| 34,864 | Petrie | Apr. 1, 1862 |

[fol. 31]

| | | |
|---|---|---|
| 1,165,917 | Tegoli | Dec. 28, 1915 |
| 1,142,483 | Broemer, et al. | June 8, 1915 |
| 1,140,009 | Tashjan | May 18, 1915 |
| 1,060,414 | Ayres | Apr. 29, 1913 |
| 158,391 | Sandholzer | Jan. 5, 1875 |
| 288,124 | Schmolz | Nov. 6, 1883 |
| 327,900 | Rogers | Oct. 6, 1885 |
| 335,351 | Hatch | Feb. 2, 1886 |
| 77,253 | Cheyney | Apr. 28, 1868 |
| 1,293,495 | Mackay, et al. | Feb. 4, 1919 |
| 669,537 | Michaud | Mar. 12, 1901 |
| 47,991 | Shaler | May 30, 1865 |
| 440,786 | Bond | Nov. 18, 1890 |
| 449,170 | Phillips | Mar. 31, 1891 |
| 1,135,556 | Tegoli | Apr. 13, 1915 |
| 1,174,627 | Sicignana | Mar. 7, 1916 |
| 120,253 | Endeman | Oct. 24, 1871 |
| 193,616 | Renwick | July 31, 1877 |
| 217,148 | Renwick | July 1, 1879 |
| 224,224 | Renwick | Feb. 3, 1880 |
| 272,744 | Morgan | Feb. 20, 1883 |
| 320,463 | Cutting | June 23, 1885 |
| 344,474 | Campbell | June 29, 1886 |
| 456,407 | Frey, et al. | July 21, 1891 |
| 559,676 | Christiansen | May 5, 1896 |
| 591,870 | Morgan | Oct. 19, 1897 |
| 725,079 | Hawkins | Apr. 14, 1903 |
| 735,409 | Pedersen | Aug. 4, 1903 |
| 745,458 | Perkins | Dec. 1, 1903 |
| 949,653 | Klinke | Feb. 15, 1910 |
| 1,075,747 | Zimmer | Oct. 14, 1912 |
| 1,100,146 | Olson | June 16, 1914 |

United States Letters Patent—Continued

| Number | Name | Date |
|---|---|---|
| 1,195,705 | Martin | Aug. 22, 1916 |
| 1,222,617 | Frye | Apr. 17, 1917 |
| 10,288 | (British) John Gardner | 1887 |

[fol. 32]

| | | |
|---|---|---|
| 10,019 | (British) Timar | May 14, 1901 |
| 22,557 | (British) Mann | 1899 |
| 155,917 | (German) E. Stulik | Nov. 11, 1904 |
| 117,089 | (German) Mann | Feb. 4, 1901 |
| 322,047 | (French) Maginez | May 13, 1903 |
| 450,706 | (French) Haas | Jan. 25, 1913 |
| 401,431 | (French) Lourdel | Oct. 2, 1909 |
| 453,958 | (French) | Feb. 3, 1913 |
| 345,878 | (French) Rachaine | 1904 |
| 457,043 | (French) | Sept. 10, 1913 |
| 457,497 | (French) Furley | Sept. 18, 1913 |
| 468,168 | (French) | June 30, 1914 |
| 472,728 | (French) | Dec. 16, 1914 |
| 474,022 | (French) | Feb. 4, 1915 |
| 476,828 | (French) | Sept. 2, 1915 |
| 481,043 | (French) Forbes | Oct. 24, 1916 |
| 448,981 | (French) Mucke | Feb. 14, 1913 |
| 27,629 | (Swiss) Iden | Apr. 2, 1904 |
| 51,062 | (Swiss) | |

Publications

"The Dollar Hen", by Milo Hastings, Published 1909 by The Arcadia Press, New York City, Pages 77 to 107, inclusive.

"Poultry Culture", Topeka, Kansas, Issue of February, 1912, Article entitled "The Mammoth Incubator Outmammothed".

"Boston Sunday Globe", Boston, Mass., Issue of November 10, 1912, Article entitled "Indoor Chicken Factories".

"Technical World", Chicago, Ill., Issue of April, 1913, Article entitled "Hatching Chickens by Wholesale".

[fol. 33] "The New Egg Farm or the Management of Poultry on a Large Scale for Commercial Purposes" by H. S. Stoddard. Published by Orange

Judd Co., New York, 1900, and added to the Patent Office Library on the 29th day of January, 1901—particularly pages 299 to 303, inclusive.

"Incubators and their Management", by J. H. Sutcliffe, 1910.

"Drying Machinery and Practice", by T. G. Marlow, 1910.

"Plenum Ventilation", by Griffiths, 1905.

"Warming Buildings by Hot Water", by Hood, 3rd Edition, 1891.

"Heating and Ventilating Buildings", by Carpenter, 1910.

"Heating and Ventilation", by A. H. Barker, 1912.

"Handbook for Heating and Ventilating Engineers", by Hoffmann, 3rd Edition, 1913.

"The Art of Hatching and Bringing up Domestic Fowl of all Kinds", by M. DeReaumur, London, 1750.

"Incubation and Its Natural Laws", by Charles H. Cyphers.

"The Incubator", by James Rankin, 1886.

"Artificial Incubating and Brooding", Reliable Poultry Journal, 1888.

Catalog of Hugon & Co., Ltd., Manchester, England, 1915, showing Fat Dryer, page 32.

Catalog of Robert Gibson & Sons, Ltd., Manchester, England, 1913, showing Confectionery Dryer, pages 5 and 21.

Catalog of Linfoot & Cooper, Manchester, England, 1910, showing Colour Dryer, page 27.

[fol. 34] And by various other prior patents and publications not now known to this defendant but which this defendant prays leave to insert in this answer by suitable amendment when ascertained.

21. Defendant is informed and believes and therefore avers that said Letters Patent numbered 1,262,860 are null and void and have no force and effect because in this country, prior to any date of the alleged invention thereof by Samuel B. Smith and for more than two years prior to the date of said application, devices, to-wit, incubators embodying the alleged invention and every substantial and material part thereof were manufactured, placed on sale, sold and/or publicly used by the persons and at their places of

address mentioned in the patents and publications listed in the foregoing paragraph numbered 20 hereof and by the following persons whose names and addresses are hereby given as follows, to-wit:

Walter B. Davis and Milo Hastings, at Kings Highway & 23rd St., Brooklyn, New York.

John Lieber and Milo Hastings, at Muskogee, Oklahoma.

E. T. Powers and Milo Hastings, at Port O'Connor, Texas.

Chas. A. Cyphers, at Philadelphia, Pa. Stroudsburg, Pa.

Rolla Lawry, at Pacific, Mo.

Bert W. Boling, of Brownstown, Indiana, at said Brownstown.

[fol. 35] And by various other persons whose names and addresses are not now known to defendant but which it prays leave to give and mention in this answer by amendment hereto, when ascertained.

22. Defendant is informed and believes and therefore avers that said Samuel B. Smith was not the first inventor of anything embodied in defendant's incubator nor of any method of use practiced or caused or intended by the defendant to be practiced but that each and all features of method or of structure employed by defendant and also disclosed in said Letters Patent 1,262,860 were invented, perfected, discovered and/or designed by each of the several patentees and persons above named in paragraphs numbered 20 and 21 hereof, at their respective adresses as given in their said patents, and set opposite their respective names in paragraph 21, all of whom were each continuously diligent in adapting and perfecting his incubators embodying such improvements or inventions and in reducing the same to practice from a date prior to any date of the alleged invention thereof by Samuel B. Smith and prior to any date following which said Samuel B. Smith was diligent in the completion of his alleged invention and that said Letters Patent are therefore ineffective to lawfully claim and monopolize any method or structure used by the defendant or intended, or caused by the defendant to be used.

23. Defendant further says that said Letters Patent are null and void and ineffective to lawfully claim and monop-

[fol. 36] lize any method or structure used by the defendant for the reason that the plaintiff failed to comply with the Statutes in such case made and provided, in that the written description of said alleged invention and of the manner and process of making, constructing and using it was not set forth in the plaintiff's application for said Letters Patent and is not set forth in said Letters Patent in such full, clear, concise and exact terms as to enable any person skilled in the art or science to which it appertains or with which it is most nearly connected, to make, construct and use the same, and the alleged principle thereof and the best contemplated mode of applying that principle was not explained in the plaintiff's said application and is not explained in said Letters Patent so as to distinguish the alleged invention from other inventions, and that said application did not, and said Letters Patent do not, particularly point out and/or distinctly claim in said claims 1, 2, 3 and 5 thereof, or in any of them, the part, improvement or combination of parts which the plaintiff claimed or now claims as his invention or discovery.

24. Defendant further says that all elements, features, and combinations of features common to the incubator disclosed in the plaintiff's said patent and to this defendant's incubators, are also common to the incubators disclosed in the prior patents and publications aforesaid and prior to the said alleged invention of the plaintiff were commonly known to and used by the public generally and are not and cannot lawfully be covered or monopolized by said Letters Patent numbered 1,262,860.

[fol. 37] 25. Defendant further avers that said Letters Patent are null and void because the complete specification of the said Letters Patent does not sufficiently describe or ascertain the nature of the said alleged invention or in what manner the same is to be performed and in particular contains no or no sufficient directions:

(a) As to the nature, capacity, arrangement or manipulation of the "restricted openings" or as to when or in what quantities foul air is to be discharged therefrom or fresh air is to be admitted thereby or as to whether or when or to what extent such fresh air is to be charged with steam or as to what is an undue loss of moisture or how it is to be [illegible].

(b) As to the velocity with which the air is to be impelled.

(c) As to the manner in which the heated air may be properly adapted to the eggs in various stages of incubation.

(d) As to what temperature is to be maintained in the apparatus or different parts thereof and what temperature is injurious therein.

(e) As to how units of heat may be carried from eggs in the more advanced stage of incubation to those in a less advanced stage and the air throughout the chamber maintained at substantially the same temperature, or as to how either of such objects may be attained.

[fol. 38] 26. Defendant further avers that said Letters Patent are null and void because the complete specification of the said Letters Patent is ambiguous and does not sufficiently ascertain the ambit of the monopoly claimed and, in particular:

(a) The expressions "applying a current of heated air", "whereby the air will be vitalized" and "for the purpose specified" are wholly vague and indefinite, or meaningless.

(b) No purpose is specified therein.

(c) It is uncertain what, if any degree of vitalization is contemplated.

(d) The public cannot distinguish the method claimed from the methods of incubation previously existing nor can they ascertain whether a given apparatus does or does not fall within the claims.

27. Defendant further avers that said Letters Patent are null and void because the complete specification of the said Letters Patent is misleading and contains false suggestions, in particular in that it is stated or suggested therein:

(a) That there is any advantage in forced draft.

(b) That there is any advantage in passing a current of air first through the eggs in a more advanced stage of incubation.

[fol. 39] (c) That eggs during incubation develop any appreciable heat or enough heat to cause an appreciable rise

in temperature in eggs contained in an incubator of ordinary construction.

(d) That anything therein described enables the rise in temperature to be prevented from reaching an injurious point with any more certainty than the methods previously existing or that an injurious temperature was in fact reached in previous methods.

(e) That anything therein described effects any improvement upon or beneficial alteration in the procedure of previous methods.

28. Defendant further avers that said Letters Patent are null and void because an inoperative machine is disclosed thereby because the process is inoperative if practiced as taught, that it lacks invention and that it is a mere adoption and extension of well-known principles of heating and ventilating.

Wherefore the defendant avers that the plaintiff is entitled to no relief whatever and prays that the Bill of Complaint be dismissed, with costs to be taxed against the plaintiff.

James Manufacturing Co., by John S. Powers, Defendant's Solicitor, 1080 Ellicott Square, Buffalo, N. Y. S. L. Wheeler, Toulmin & Toulmin, of Counsel for Defendant.

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[fol. 40] In the United States District Court

[Title omitted]

Plaintiff's Motion for Bill of Particulars

Now comes the plaintiff herein and moves that the defendant shall be ordered to furnish better particulars as to its defense in the following respects:

(a) State which of the one hundred forty-one (141) United States Patents, three (3) British Patents, two (2) German Patents, thirteen (13) French Patents and two (2) Swiss Patents referred to in Paragraph 20 of the Answer, it will offer in evidence at the trial of this case to support the defenses set up, and upon which of said patents it will rely upon for any of said defenses.

(b) State which of the nineteen (19) publications referred to in Paragraph 20 of the Answer, it will offer in evidence at the trial of this case to support the defenses set up, and upon which of said patents it will rely upon for any of said defenses.

[fol. 41] (c) State which of the six (6) prior uses alleged in Paragraph 21 of the Answer, the defendant will attempt to prove at the trial of this case, or upon which it will rely to support any of the defenses set up in this case.

(d) Furnish complete description of such prior uses, the apparatus employed therein, and when and where such uses occurred.

Charles W. Parker, Attorney for Plaintiff. Charles W. Parker, A. L. Ely, of Counsel.

Receipt of the above Motion for Bill of Particulars acknowledged this — day of September, 1932.

Toulmin & Toulmin, Attorneys for Defendant.

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[fol. 42] In the United States District Court

[Title omitted]

Answers of Defendant to Plaintiff's Motion for Bill of Particulars—Filed October 28, 1932

The defendant furnishes the following bill of particulars in compliance with the plaintiff's motion and makes answers to the specific questions propounded therein as follows:

Answer to Question 1:

The defendant expects to offer in evidence at the trial of this case, to support the defenses set-up, the following letters patent:

| | | | |
|---|---|---|---|
| 120,253 | H. Endeman | October | 24, 1871 |
| 173,016 | C. W. & E. A. Jones | February | 1, 1876 |
| 193,616 | E. S. Renwick | July | 31, 1877 |
| 198,422 | H. B. Smith | December | 18, 1877 |
| 206,389 | T. Clegg | July | 30, 1878 |
| 240,004 | P. H. Bate | April | 12, 1881 |

| | | | |
|---|---|---|---|
| 280,490 | Lumpp | July | 3, 1883 |
| 288,124 | W. Schmolz | November | 6, 1883 |
| 327,900 | W. H. Rogers | October | 6, 1885 |
| 410,017 | J. J. Phillips | August | 27, 1889 |
| 432,282 | Proctor, et al. | July | 15, 1890 |
| 440,786 | J. Bond | November | 18, 1890 |
| 449,231 | S. G. Phillips | March | 31, 1891 |
| Re. 11,460 | J. K. Proctor | December | 25, 1894 |
| 535,175 | C. W. Schwartz, Jr. | March | 5, 1895 |
| 540,107 | N. McAslan | May | 28, 1895 |
| 553,723 | J. K. Proctor | January | 28, 1896 |
| 559,260 | J. T. Butts | April | 28, 1896 |
| 691,837 | V. S. Bell | January | 28, 1902 |
| 798,697 | F. C. Perkins | September | 5, 1905 |
| 891,019 | L. Verita | June | 16, 1908 |
| 917,483 | C. C. Peck | April | 6, 1909 |
| 934,274 | M. E. Bradley | September | 14, 1909 |
| 1,010,809 | J. Schmidt & H. Schutterle | December | 5, 1911 |
| 1,086,567 | G. Stone | February | 10, 1914 |
| 1,086,903 | A. DiDomenica & A. Amicarelli | February | 10, 1914 |
| 1,096,708 | R. G. Furley | May | 12, 1914 |
| 1,144,232 | C. H. Osborn | June | 22, 1915 |
| 1,270,900 | S. Viviano | July | 2, 1918 |
| 10,288 | (British) John Gardner | | 1887 |

Answer to Question 2:

The defendant expects to offer in evidence at the trial of this case, to support the defenses set-up, the following publications, being all of the publications mentioned in paragraph 20 of the amended answer filed herein:

[fol. 44] "The Dollar Hen", by Milo Hastings, Published 1909 by The Arcadia Press, New York City, pages 77 to 107 inclusive.

"Poultry Culture", Topeka, Kansas, Issue of February 1912, Article entitled "The Mammoth Incubator Outmammothed".

"Boston Sunday Globe", Boston, Mass., Issue of November 10, 1912, Article entitled "Indoor Chicken Factories".

"Technical World", Chicago, Ill., Issue of April 1913, Article entitled "Hatching Chickens by Wholesale".

"The New Egg Farm or the Management of Poultry on a Large Scale for Commercial Purposes", by H. S. Stoddard. Published by Orange Judd Co., New York, 1900, and added to the Patent Office Library on the 29th day of January, 1901—particularly pages 299 to 303 inclusive.

"Incubators and their Management", by J. H. Sutcliffe, 1910.

"Drying Machinery and Practice", by T. G. Marlow, 1910.

"Plenum Ventilation", by Griffiths, 1905.

"Warming Buildings by Hot Water", by Hood, 3rd Edition, 1891.

"Heating and Ventilating Buildings", by Carpenter, 1910.

"Heating and Ventilation", by A. H. Barker, 1912.

"Handbook for Heating and Ventilating Engineers", by Hoffman, 3rd Edition, 1913.

"The Art of Hatching and Bringing up Domestic Fowl of all Kinds", by M. DeReaumur, London, 1750.

[fol. 45] "Incubation and Its Natural Laws", by Charles H. Cyphers.

"The Incubator", by James Rankin, 1886.

"Artificial Incubating and Brooding", Reliable Poultry Journal, 1888.

Catalogue of Hugon & Co. Ltd., Manchester, England, 1915, showing Fat Dryer, page 32.

Catalogue of Robert Gibson & Sons, Ltd., Manchester, England, 1913, showing Confectionery Dryer, pages 5 and 21.

Catalogue of Linfoot and Cooper, Manchester, England, 1910, showing Colour Dryer, page 27.

Answer to Question 3:

The defendant expects to prove at the trial of this case, and will rely upon the same, the prior use of Bert W. Boling.

Answer to Question 4:

The defendant is at present advised and informed that the priof use of said Bert W. Boling consisted of the mann-

facture, sale and use of an incubator by said Bert W. Boling at Brownstown, Indiana, prior to any date of the alleged invention, alleged to be covered in letters patent No. 1,262,-862, and for more than two years prior to the date of the application for said patent at said Brownstown, Indiana.

John S. Powers, Solicitor for Defendant. H. A. Toulmin, H. A. Toulmin, Jr., of Counsel.

[fol. 46] IN THE UNITED STATES DISTRICT COURT

[Title omitted]

AMENDED ANSWERS OF DEFENDANT TO PLAINTIFF'S MOTION FOR BILL OF PARTICULARS—Filed October 31, 1932

The defendant furnishes the following bill of particulars in compliance with the plaintiff's motion and makes answers to the specific questions propounded therein as follows:

Answer to Question 1:

The defendant expects to offer in evidence at the trial of this case, to support the defenses set-up, the following letters patent:

| | | | |
|---|---|---|---|
| 3,019 | N. A. Guerin | March | 30, 1843 |
| 120,253 | H. Endeman | October | 24, 1871 |
| 173,016 | C. W. & E. A. Jones | February | 1, 1876 |
| 193,616 | E. S. Renwick | July | 31, 1877 |
| 198,422 | H. B. Smith | December | 18, 1877 |
| 206,389 | T. Clegg | July | 30, 1878 |
| 240,004 | P. H. Bate | April | 12, 1881 |
| 280,490 | Lumpp | July | 3, 1883 |

[fol. 47]

| | | | |
|---|---|---|---|
| 288,124 | W. Schmolz | November | 6, 1883 |
| 327,900 | W. H. Rogers | October | 6, 1885 |
| 335,961 | E. S. Renwick | February | 9, 1886 |
| 347,946 | J. K. Meschter | August | 24, 1886 |
| 410,017 | J. J. Phillips | August | 27, 1889 |
| 432,282 | Proctor, et al. | July | 15, 1890 |
| 440,786 | J. Bond | November | 18, 1890 |
| 449,231 | S. G. Phillips | March | 31, 1891 |
| 11,460 | J. K. Proctor | December | 25, 1894 |

| | | | |
|---|---|---|---|
| 535,175 | C. W. Schwartz, Jr. | March | 5, 1895 |
| 540,107 | N. McAslan | May | 28, 1895 |
| 553,723 | J. K. Proctor | January | 28, 1896 |
| 559,260 | J. T. Butts | April | 28, 1896 |
| 656,760 | G. T. Woods | August | 28, 1900 |
| 691,837 | V. S. Bell | January | 28, 1902 |
| 780,912 | N. H. Phillips | January | 24, 1905 |
| 789,719 | J. M. Day | May | 16, 1905 |
| 798,697 | F. C. Perkins | September | 5, 1905 |
| 828,181 | G. H. Boyd | August | 7, 1906 |
| 843,909 | F. M. Peters, et al. | February | 12, 1907 |
| 891,019 | L. Verna | June | 16, 1908 |
| 917,483 | C. C. Peck | April | 6, 1909 |
| 934,274 | M. E. Bradley | September | 14, 1909 |
| 951,650 | Wm. Miller | March | 8, 1910 |
| 1,010,809 | J. Schmidt & H. Schutterle | December | 5, 1911 |
| 1,086,567 | G. Stone | February | 10, 1914 |
| 1,086,903 | A. DiDomenica & A. Amicarelli | February | 10, 1914 |
| 1,096,708 | R. G. Furley | May | 12, 1914 |
| 1,137,752 | Geo. E. Goldstein | May | 4, 1915 |
| 1,144,232 | C. H. Osborn | June | 22, 1915 |
| 1,165,958 | T. B. Freas | December | 28, 1915 |
| 1,166,311 | J. J. F. Bales | December | 28, 1915 |
| 1,205,445 | Roy F. Fullington | November | 21, 1916 |

[fol. 48]

| | | | |
|---|---|---|---|
| 1,270,900 | S. Viviano | July | 2, 1918 |
| 10,288 | (British) John Gardner | | 1887 |
| 10,019 | (British) Ignaz Timar | | 1901 |
| 155,917 | (German) Stulik | November | 11, 1904 |

Answer to Question 2:

The defendant expects to offer in evidence at the trial of this case, to support the defenses set-up, the following publications, being all of the publications mentioned in paragraph 20 of the amended answer filed herein:

"The Dollar Hen", by Milo Hastings, Published 1909 by The Arcadia Press, New York City, pages 77 to 107 inclusive.

"Poultry Culture", Topeka, Kansas, Issue of February, 1912, Article entitled "The Mammoth Incubator Out-Mammothed".

"Boston Sunday Globe", Boston, Mass., Issue of November 10, 1912, Article entitled "Indoor Chicken Factories".

"Technical World", Chicago, Ill., Issue of April, 1913. Article entitled "Hatching Chickens by Wholesale".

"The New Egg Farm or the Management of Poultry on a Large Scale for Commercial Purposes", by H. S. Stoddard, Published by Orange Judd Co., New York, 1900, and added to the Patent Office Library on the 29th day of January, 1901—Particularly pages 299 to 303 inclusive.

"Incubators and their Management", by J. H. Sutcliffe, 1910.

[fol. 49] "Drying Machinery and Practice, by T. G. Marlow, 1910.

"Plenum Ventilation", by Griffiths, 1905.

"Warming Buildings by Hot Water", by Hood, 3rd Edition, 1891.

"Heating and Ventilating Buildings", by Carpenter, 1910.

"Heating and Ventilation", by A. H. Barker, 1912.

"Handbook for Heating and Ventilating Engineers", by Hoffman, 3rd Edition, 1913.

"The Art of Hatching and Bringing up Domestic Fowl of all Kinds", by M. DeReaumur, London, 1750.

"Incubation and its Natural Laws", by Charles H. Cyphers.

"The Incubator", by James Rankin, 1886.

"Artificial Incubating and Brooding", Reliable Poultry Journal, 1888.

Catalogue of Hugon & Co. Ltd., Manchester, England, 1915, showing Fat Dryer, Page 32.

Catalogue of Robert Gibson & Sons, Ltd., Manchester, England, 1913, showing Confectionery Dryer, pages 5 and 21.

Catalogue of Linfoot and Cooper, Manchester, England, 1910, showing Colour Dryer, page 27.

Answer to Question 3:

The defendant expects to prove at the trial of this case, and will rely upon the same, the prior use of Bert W. Boling.

Answer to Question 4:

The defendant is at present advised and informed that the prior use of said Bert W. Boling consisted of the manu-
[fol. 50] facture, sale and use of an incubator by said Bert W. Boling at Brownstown, Indiana, prior to any date of the alleged invention, alleged to be covered in letters patent No. 1,262,862, and for more than two years prior to the date of the application for said patent at said Brownstown, Indiana.

John S. Powers, Solicitor for Defendant. H. A. Toulmin, Jr., of Counsel.

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IN THE UNITED STATES DISTRICT COURT

[Title omitted]

MOTION OF PLAINTIFF FOR SUPPLEMENTAL BILL OF PARTICULARS—Filed June 10, 1933

Now comes the plaintiff herein, by his attorneys, and moves this Honorable Court for an Order requiring defend-
[fol. 51] ant to furnish better particulars as to its defense, in the following respects.

(a) State which of the forty-two (42) United States patents and two (2) British patents set up in Defendant's Amended Answers to Plaintiff's Motion for a Bill of Particulars it will offer in evidence at the trial of this case to support any or all of the defenses set up.

(b) State which of the nineteen (19) publications set up in said Amended Answers it will offer in evidence at the trial of this case to support any or all of the defenses set up.

(c) Give the name of the publisher of each of the nineteen (19) publications set forth in said Amended Answers and the pages or passages from such publications upon

which defendant expects to rely, and state in what library, or other place, copies of same may be found.

(d) Give a full and complete description of the alleged prior use of Bert W. Boling of Brownstown, Indiana, set forth in the Amended Answers of the Defendant to Plaintiff's Motion for Particulars, together with a full and complete description of the apparatus alleged to have been used by the said Bert. W. Boling at Brownstown, Indiana, and the date of such alleged prior use upon which the defendant expects to rely.

Charles W. Parker, Attorney and Solicitor for Plaintiff. C. L. Ely, Max D. Farmer, of Counsel.

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[fol. 52] In the United States District Court

[Title omitted]

Defendant's Response to Plaintiff's Motion for Supplemental Bill of Particulars—Filed June 19, 1933

In response to Plaintiff's motion for a supplemental bill of particulars, defendant hereby, without contest or hearing, furnishes such particulars.

Answering Question (a), defendant says that of the patents pleaded, it will offer in evidence and rely upon the following:

| | | | |
|---|---|---|---|
| 3,019 | N. A. Guerin | March | 30, 1843 |
| 120,253 | H. Endeman | October | 24, 1871 |
| 193,616 | E. S. Renwick | July | 31, 1877 |
| 198,422 | H. B. Smith | December | 18, 1877 |
| 206,389 | T. Clegg | July | 30, 1878 |
| 240,004 | P. H. Bate | April | 12, 1881 |
| 280,490 | Lumpp | July | 3, 1883 |
| 327,900 | W. H. Rogers | October | 6, 1885 |
| 347,946 | J. K. Meschter | August | 24, 1886 |
| 410,017 | J. J. Phillips | August | 27, 1889 |
| 432,282 | Proctor, et al. | July | 15, 1890 |
| [fol. 53] Re. 11,460 | J. K. Proctor | December | 25, 1894 |
| 535,175 | C. W. Schwartz, Jr. | March | 5, 1895 |
| 540,107 | N. McAslan | May | 28, 1895 |
| 553,723 | J. K. Proctor | January | 28, 1896 |
| 691,837 | V. S. Bell | January | 28, 1902 |

| | | |
|---|---|---|
| 798,697 | F. C. Perkins | September 5, 1905 |
| 843,909 | F. M. Peters, et al. | February 12, 1907 |
| 891,019 | L. Verna | June 16, 1908 |
| 917,483 | C. C. Peck | April 6, 1909 |
| 934,274 | M. E. Bradley | September 14, 1909 |
| 1,010,809 | J. Schmidt & H. Schutterle | December 5, 1911 |
| 1,086,567 | G. Stone | February 10, 1914 |
| 1,144,232 | C. H. Osborn | June 22, 1915 |
| 1,165,958 | T. B. Freas | December 28, 1915 |
| 1,166,311 | J. J. F. Bales | December 28, 1915 |
| 1,205,445 | R. F. Fullington | November 21, 1916 |
| 1,270,900 | S. Viviano | July 2, 1918 |
| 10,288 | (British) John Gardner | 1887 |
| 155,917 | (German) Stulik | November 11, 1904 |

Answering Questions (b) and (c), Defendant says that of the publications pleaded it will offer in evidence and rely upon the following:

"The Dollar Hen", by Milo Hastings, Published 1909, by the Arcadia Press, New York City, pages 77 to 107 inclusive.

"Technical World", Chicago, Ill., Issue of April, 1913, Article entitled "Hatching Chickens by Wholesale".

"The New Egg Farm or the Management of Poultry on a Large Scale for Commercial Purposes", by H. S. Stoddard, Published by Orange Judd Co., New York, 1900, particularly pages 299 to 303 inclusive.

[fol. 54] "The Art of Hatching and Bringing up Domestic Fowl of all Kinds", by M. DeReaumur, London, 1750, particularly the following pages: 1; 2 (lines 1-13); 3 (lines 5 to end); 4; 5 (line 1 and lines 17-27); 6 (last paragraph); 7 (lines 1-2); 9 (lines 3-18); 13 (lines 16-22 and last paragraph); 14 (lines 5-17); 15 (all except last seven lines); 16 (lines 18-32); 17 (lines 8-26); 18 (lines 19-22); 19 (lines 21-35); 20 (lines 5-16); 22 (lines 4-6) and from line 11 to end; 23 (lines 1-5 and lines 9-21); 35 (last paragraph); 36 (first six lines); 47 (first full paragraph); 48 (lines 12 to end and also opposite Plate II); 49; 50 and the opposite Plate III; 51 and the opposite Plate IV; 52, 53, 54 and the Plate numbered V; 61 (lines 7-18); 71 (lines 12-17); 116 (lines 16-23); 122 (lines 12-24);

130 (lines 10-29); 146 (line 29 to end); 147 and the opposite Plate numbered VII; 148; 149; 152 (last paragraph); 153 (lines 1-24); 154 (lines 13-18); 157 (lines 4-21); 184 (last paragraph); 185 (lines 1-12); 187 (lines 10-25); 190 (last five lines); 212 (line 23 to end, and also the opposite plate numbered VIII); 213, 214 and 215. (Printed for C. Davis, over-against Gray's Inn Gate, Holbourn, A. Millar, and J. Nourse, opposite Katherine Street, in the Strand. MDCCL.)

Answering Question (d) with reference to the Burt W. Bolling prior use of Brownstown, Ind., plaintiff is advised that defendant does not deem it necessary to prove that [fol. 55] prior use and, therefore, will not do so as the other defenses are regarded as ample.

H. A. Toulmin, H. A. Toulmin, Jr., Counsel for Defendant. John S. Powers, Solicitor for Defendant.

June 16, 1933.

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UNITED STATES DISTRICT COURT

[Title omitted]

NOTICE OF PRIOR USE AND PUBLICATIONS DEFENDANT WILL RELY ON AND DEMAND UNDER EQUITY RULE 58—Filed October 7, 1933

Plaintiff is hereby given notice that at the trial of the above entitled cause, defendant will rely upon and prove [fol. 56] the prior use of Milo Hastings, at King's Highway and 23rd St., Brooklyn, New York, at Muskogee, Oklahoma, at Port O'Connor, Texas, and elsewhere in the United States, in the years 1911 and 1912, and prior thereto, as pleaded in the amended answer.

Plaintiff will also take notice that at the trial of the above entitled cause, defendant will rely upon and prove the publication "Poulty Culture", Topeka, Kansas, issue of February, 1912, article entitled "The Mammoth Incubator Outmammothed", which publication is also pleaded in the amended answer herein.

Defendant will further rely upon and prove at the trial the following publications:

Electrical World, of July 6, 1912, page 55, and of February 6, 1915, Vol. 65, No. 6, pages 362 and 363, a copy of these publications being available at the Engineering Societies Library, 29 West 39th Street, New York, New York.

Popular Mechanics Magazine, 318 W. Washington St., Chicago, Illinois, pages 630 and 631, issue of November, 1912.

Defendant attaches hereto photostatic copies of the material portions of the publications referred to above and demands, under Equity Rule 58, that plaintiff admit that such photostatic copies are true and accurate reproductions of the matter referred to and that the said works were published at the times set forth herein and that such publica- [fol. 57] tions were generally circulated in the United States at the times indicated.

The original of this notice and demand is being sent with a true and correct copy thereof to Mr. Albert L. Ely, counsel for plaintiff, Leader Building, Cleveland, Ohio, with the request that he acknowledge service on the original and return it to counsel for defendant, and that he endorse on such original his admission as demanded herein or his refusal to admit the matters covered by this demand.

Toulmin & Toulmin, Counsel for Defendant.

Receipt of copy of the above acknowledged Sept. 28, 1933.
Ely & Barrow, Solicitors for Plaintiff.

The publications are correctly reproduced.

Article appearing in the February, 1912, issue of "Poultry Culture", annexed, will be found herein as Defendant's Exhibit No. 23, page 1405 of this record.

Index cover page and pages 630 and 631 of the November, 1912, issue of "Popular Mechanics" magazine, annexed, will be found herein as Defendant's Exhibit No. 24, page 1407 of this record.

July 6, 1912, issue of "Electrical World", annexed, will be found herein as Defendant's Exhibit No. 25, page 1410 of this record.

[fol. 58] IN UNITED STATES DISTRICT COURT

[Title omitted]

STIPULATION OF CONSOLIDATION

It is stipulated by and between the attorneys for the parties to the above entitled cause, that the related and co-pending case of Samuel B. Smith vs. Elmira Hatcheries, Inc., Equity No. 254, be consolidated herewith, pursuant to a stipulation of even date entered in said Samuel B. Smith vs. Elmira Hatcheries, Inc., Equity No. 254.

Charles W. Parker, Attorney for Plaintiff. John S. Powers, Attorney for Defendant.

It is so ordered this 20th day of November, 1933.

John Knight, United States District Judge.

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[fol. 59] IN UNITED STATES DISTRICT COURT

[Title omitted]

STIPULATION OF CONSOLIDATION

It is hereby stipulated, by and between the attorneys for the parties to the above entitled cause, that this cause may be, and hereby is, consolidated with the co-pending and related cause entitled Samuel B. Smith vs. James Manufacturing Company, Equity No. 253, and that, as consolidated, the causes shall be known as Samuel B. Smith vs. James Manufacturing Company and Elmira Hatcheries, Inc., Equity No. 253.

It is further stipulated, that where the papers heretofore filed in one of said causes may be, in substance, duplicates of or substantially the same as the papers filed in the other, the record on appeal may be limited, as counsel may agree, to the paper in one of said causes, e. g., pleading, stipulation, order, or other paper otherwise competent for or material to the record.

Charles W. Parker, Attorney for Plaintiff. John S. Powers, Attorney for Defendant.

So ordered this 20th day of November, 1933.

John Knight, United States District Judge.

[fol. 60] IN THE UNITED STATES DISTRICT COURT

[Title omitted]

STIPULATION LIMITING RECORD ON APPEAL—Filed September 23, 1935

Pursuant to prior stipulation heretofore filed herein and subject to the approval of the court, it is stipulated between Samuel B. Smith, plaintiff, and James Manufacturing Company and Elmira Hatcheries, Incorporated, defendants, that the two causes of Samuel B. Smith vs. James Manufacturing Co., Equity No. 253, and Samuel B. Smith vs. Elmira Hatcheries, Inc., Equity No. 254, having been consolidated as one case, the transcript of record on appeal to the Circuit Court of Appeals for the Second Circuit may be made up so as to include only the pleadings, documents and papers filed in the case of Samuel B. Smith vs. James Manufacturing Co., Equity No. 253 and the narrative statement of evidence submitted at the consolidated trial, with-
[fol. 61] out including the pleadings, documents and papers filed in the case of Samuel B. Smith vs. Elmira Hatcheries, Inc., Equity No. 254.

James Manufacturing Company, by Toulmin & Toulmin, Attorneys. Elmira Hatcheries, Inc., by Toulmin & Toulmin, Attorneys. Samuel B. Smith, by A. S. Ely, Attorney.

Approved this September 23rd, 1935. John Knight, United States Judge.

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IN THE UNITED STATES DISTRICT COURT

[Title omitted]

MOTION TO DISMISS BILL OF COMPLAINT—Filed March 13, 1935

Now comes the defendant, through its counsel, Toulmin and Toulmin, and moves this Honorable Court as follows:

That plaintiff's bill be dismissed; and that plaintiff be enjoined from instituting and/or prosecuting any suit or
[fol. 62] suits against the customers of defendant who are

using James Incubators of the kind attempted to be involved in this suit, this motion being made on the following grounds:

(1) Because the plaintiff has no title to the Smith patent No. 1,262,860 dated April 16, 1918, on which this action is based, except as to incubators which have an egg capacity of more than 16,500 eggs, and because defendant's incubators are of egg capacity less than 16,500 eggs. Defendant's incubators here involved have the following egg capacity: fifty-eight hundred and eighty (5880) eggs per incubator.

(2) Because the plaintiff has heretofore granted, executed, and delivered, an exclusive license under said patent here in suit, in and by an instrument in writing, duly executed by plaintiff under date of April 29, 1927, which exclusive license is in full force and effect.

(3) Because, as to the injunction branch of this motion, plaintiff has no legal right to threaten, bring, and maintain, not only this suit, but any other suit or suits against the customers of defendant, whose incubators are all of egg capacity less than 16,500, and are not, therefore, within any present right of plaintiff.

This motion will be called up for hearing in the afternoon of March 13th, 1935, in the above named court before His Honor, Judge Knight.

Respectfully submitted, Toulmin & Toulmin, Counsel for Defendant.

Dayton, Ohio, March 11, 1935.

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[fol. 63] IN THE UNITED STATES DISTRICT COURT

[Title omitted]

**Narrative Statement of the Evidence**

Be it remembered that at the trial of the above entitled [illegible], before Hon. John Knight, District Judge for the [illegible]ern District of New York, at the Federal Building, [illegible]lo, New York, begun on January 29, 1934, the following proceedings were had and evidence introduced which

is hereby reduced in narrative form pursuant to Equity Rule 75:

The plaintiff appeared by Messrs. Parker, Prochow & Farmer represented by Max D. Farmer, Esq., and Albert L. Ely, Esq., and George C. McConnaughey, Esq.

The defendants appeared by Messrs. Toulmin and Toulmin represented by H. A. Toulmin, Esq., and H. A. Toulmin, Jr., Esq., and John S. Powers, Esq.

Counsel for the plaintiff first offered in evidence a copy of the patent in suit stating that claims 1, 2, 3 and 5 of the patent would be relied upon.

Thereupon a copy of U. S. Letters Patent No. 1,262,860, dated April 16, 1918, was offered and received in evidence [fol. 64] and marked Plaintiff's Exhibit No. 1.

Counsel for the plaintiff then made the following statement:

Now, before the proceeding opened, I disclosed to Counsel for the defendant copies of the various instruments passing title to the plaintiff. I will just review that for a moment. The patent in suit was assigned to the Buckeye Incubator Company, prior to issuance, by an instrument dated June 4, 1917. On that condition and of that time, Smith was a licensee under the patent. He took a license back under his patent—assigned his patent to the Buckeye Company and took a license back under the patent, and that condition existed until April 29, 1927, when the Buckeye Company reassigned the patent to Dr. Smith, the original inventor, and the Buckeye Company then took a license under the patent for the manufacture of incubators of smaller sizes comparable with the size which is now made by the defendant in this case.

So that I think it is fair to say that the title to the patent is stipulated as alleged in the bill of complaint.

We have also stipulated between ourselves—the usual stipulation that uncertified copies may be used with the full force and effect of the originals, and photostatic copies of foreign patents and publications, with the right of correction if error appear.

We have also stipulated in regard to the stenographer's costs; that is, that half would be borne by each of the parties at the present time, the whole amount to be charged with the costs.

I think that takes care of the formal matters.

[fol. 65] Counsel for the plaintiff then offered in evidence a book of decisions on the Smith patent containing reported and unreported decisions with regard to the patent in suit, which book was admitted in evidence and marked Plaintiff's Exhibit No. 2.

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JOSEPH INSKIP TAGGART, a witness called on behalf of the plaintiff, being first duly sworn, testified in substance as follows:

Direct examination.

By Mr. Ely:

My name is Joseph Inskip Taggart. My age is 46. My residence, Cleveland, Ohio. My present occupation is Assistant General Manager of the Smith Incubator Company. The Smith Incubator Company is a corporation of Ohio. It is engaged in the manufacture and sale of Mammoth incubators, under the Smith Patent in suit.

I am in more or less direct charge of the manufacturing of the incubators and am in direct charge of the erection and service of these machines, and am in direct charge of the research work, all experimental work; and it is also my duty to keep in contact with the various universities over the country to check on any improvements or any experiments that are going on in the universities, keep in contact with poultry developments, and to keep generally informed upon the subject of incubation and poultry. I am a graduate from Ohio Wesleyan University, at which school I gave special attention to zoology. I was graduated there with high honors in that department.

[fol. 66] While I was there, I was assistant professor for two years. After that time I taught one year. I taught zoology; and for the past ten years, or eleven years, I have been actively associated either in the hatchery work or in my present work.

During that time it has been my business to investigate poultry conditions, hatchery conditions and incubators in every state in the union. I have had experience actually running incubator plants. For four years I was in charge of a hatchery known as Smith Standard Company of Cleveland, which, at that time, had from a million to a million

and a quarter egg capacity. I also own a hatchery at the present time, and have owned two. The incubators that were used at the Smith Standard Company were a machine that was manufactured under the patent of the Smith Incubator Company. The original machines there were the first machines that were built under the patent.

I describe, just briefly, the process of incubation and the hatching of an egg as follows: An egg, as we all know, consists of three main parts, the yolk, the white and the shell. At the time the egg is laid, the shell is practically full.

The content of the egg is more than two-thirds water. The part of the egg that grows and develops into a chick under incubation is a small germ spot which is located on the top of the yolk.

The yolk is developed in the ovary of the hen, and the yolk part is many times the size of the germ spot.

When the yolk is dropped from the ovary, it lodges in the oviduct, and as it passes down the oviduct to the vent, [fol. 67] it passes certain glands which secrete various layers of albumen on the side of the yolk, and later, the shell, before the egg finally is ready to pass from the vent.

This process of moving, or this journey through the oviduct, varies 24 to 36 hours, depending upon conditions.

The egg is fertilized, generally, just a short time after it drops into the oviduct. The male germ is there waiting for it, and incubation starts right away. That is, incubation starts as soon as we have the union of the male germ and the female germ. The temperature being right, incubation will continue until the egg has passed from the vent, so that by the time an egg is laid, the average egg has been incubating from 24 to 36 hours.

After it is laid, if the egg is chilled, this incubation process stops. If it is chilled below a temperature of 69, it becomes completely dormant. When the temperature is again raised to a point of 70, incubation starts slowly, but for it to become active, it requires a temperature near our body temperature, 99 to 100 degrees.

As incubation starts again, the live germ develops rapidly. It is surrounded with excellent food, and as long as we keep the temperature right and prevent too rapid evaporation of moisture, we have development taking place.

It also requires that the egg be turned from time to time, which we will refer to later as turning or exercising the embryo.

To complete the process of hatching requires approximately 21 days from the time the egg is laid. This varies with individual eggs, with eggs from individual flocks or [fol. 68] individual hens, and varies slightly with breeds, but is it approximately 21 days. During this period, or during the fore part of this period, the embyro lives almost entirely upon the white of the egg. About the seventeenth to the eighteenth day, varying with individuals again, the white of the egg has become practically absorbed, and at that time the egg changes, or the chick changes its diet and starts using the yolk of the egg. By the time the egg is ready to hatch completely, or the chick to come from the shell, about half of the yoke has been absorbed. The other half has been drawn into its body and forms a sac or like a small egg inside the body. This will be still used as food and water, and will eventually be absorbed, sometimes in 48 hours, sometimes 72, but it will eventually become absorbed.

During this process, the animal or the embyro has been assimilating food and oxygen. Bringing these two together naturally creates heat and, roughly, the larger the embyro, the greater the amount of heat that is developed.

The embryo within the shell gets its oxygen as follows:

Oxygen is assimilated through the shell, and inside the shell is picked up by osmosis process by the placenta which covers the inside of the egg, and transmission of oxygen—as oxygen is taken in, carbon dioxide is given off. Also, there is a certain amount of moisture given off. By the time the chick emerges from the shell, approximately one-sixth of the weight of the chick, or the weight of the contents of the chick, has been evaporated.

If we evaporate too rapidly, we dry down the chick too much; we have a poor chick. It we control the evapora- [fol. 69] tion during the entire period, we get a better chick, and it is quite essential that that rate of evaporation be controlled, not just the last day, but during the entire period.

As to the total water content of the egg passing off by way of evaporation I would say, about 15 to 20 per cent. of the egg by weight, that is, the interior of the egg, by weight.

I have some graphic means of showing development of heat in the egg during the process of hatching. This graph that I have here is gotten up to show the heat development,

day by day, during the 21 days of hatching. The heavy curved line is labeled "Heat Units." Across the bottom we have numbered the different days of incubation. For each section upward from the base line we have represented that as one calory. This calory is used in the metric system as a unit of heat. It represents approximately four B. T. U.'s or British thermal units, and a British thermal unit represents the amount of heat that is necessary to raise a pound of water one degree.

That is the large calory that I speak of.

That is not the small calory they speak about in food.

By following the heavy black line, or the heat curve, you will note that it starts upward somewheres about the fourth or fifth day of incubation.

Now, prior to that time, there is no heat developed. There is some heat actually absorbed due to chemical changes that are taking place within the egg, but you will note, from the fifth day on, the heat curve raises gradually until approximately the 17th day, at which time the heat [fol. 70] development is arrested for a period. It is right at the time when they are changing from the feeding on the white of the egg to the yolk of the egg, and then, after a period of 24 to 35 hours, it starts up again.

Now, that represents the development per day in the ordinary egg.

The red line or the red curve across the bottom of the chart represents the heat consumed per egg per day because of the evaporation of moisture. It takes a certain number of units of heat to evaporate a given amount of water, and if we put an egg in an incubator and maintain a certain temperature on the incubator, if that egg is not fertile, so it develops no heat of its own, it will never get up to the incubator temperature until the water is evaporated, and that is a sizable amount of heat when considered in a large mass of eggs.

This heat absorption, due to the evaporation of moisture, is sufficient so that it keeps the eggs at a sub-normal or sub-incubator temperature, until you reach a point where the heat development crosses the heat absorption curve. This is approximately the tenth day. It varies with individuals. You will note that the heat absorption is comparatively uniform until about the 19th day, at which time the chick pips the shell; somewhere during the 19th or beginning of the

20th day, they pip the shell, and as soon as they do, they begin to breathe by the mouth. From that time on, the evaporation is much more rapid, and when they roll out of the shell, they are quite moist, and evaporation ends quite rapidly. That evaporation is a chilling process from the very first, of course.

[fol. 71] At about the tenth day the amount of heat which is generated by the egg exceeds the amount of heat which is absorbed by evaporation. And that is about half way through the incubation period with respect to the incubation process.

I have termed the eggs that are absorbing heat as endothermic eggs. That means that they need heat, they are picking up heat. The eggs that are giving off heat are called exothermic eggs. I have colored here the heat that will be absorbed. I have graphically shown the heat that will be absorbed during the first ten days, and I have also graphically shown the heat that will be given off during the latter half of the hatching period.

The amount of heat which is given off—comparing the amount of heat which is given off, that is, the heat which is over and above that required for evaporation—the amount of that heat compared with the amount of heat that is necessarily absorbed is several times greater.

There is a line across on this chart at about the 17½ day. The purpose of that line on the chart is as follows:

In the James way incubator, they recommend that the eggs can be removed from the incubator at the 17½ to 18th day, and that was put in there to represent that period, and to show that the red area, or the heat given off up to that period, was still considerably greater than the heat required by the heat-absorbing eggs.

That is to say that even where the eggs are taken out of the incubator at 17½ days, there would be an excess of heat given off over the heat that is required to supply the endothermic eggs.

[fol. 72] Those dot-and-dash lines which appear beneath by coloring represent the amount of oxygen consumed and amount of carbon-dioxide given off. An egg passes from the endothermic, that is, heat-absorbing, to the exothermic stage about the tenth day. That varies with individual cases. I have another graph or chart which shows heat development in the egg.

The graph or chart identified by the witness as above was then offered and received in evidence and marked Plaintiff's Exhibit No. 3.

This chart which has just been handed me shows the heat developed by incubating eggs. Before looking at the chart, I wish to call your attention to the picture that is attached to the chart. That picture is taken of either this box or a similar box (showing box to the court). Within the box I have placed a dozen eggs. I will get back to this stage a little later. Through the side of the box I have placed a fever thermometer or clinical thermometer, and then the box was sealed. You will note that the box is heavily insulated.

Before starting this experiment or test, I place this box, empty, within the incubator, and I leave it there for at least 12 hours, so that the box would take on the temperature of the incubator as nearly as possible. Then, at a given period or given time, I would take 12 eggs of a known stage of incubation, and place them in the box, as shown there. The fever thermometer I would cool and shake down so that it was down to at least 90. Understand, this is all taking place inside the incubator, where the temperature is 99. Placing in the box 12 eggs of known stage of incubation, seeing the thermometer was down to at least [fol. 73] 90, then I would close the box, seal it and leave it on the floor of the incubator, where the air temperature around it was just the same as it had been around the eggs for hours.

As to how I get the temperature down to 90 when it is naturally 99—

The fever thermometer, you could touch it to your lips, or in any water, and hold it under a fan, and the cooling action of the evaporating moisture would soon put it down to the temperature of your incubator, and you could shake it down below the recording point.

Now, within 30 minutes after the box was sealed, I would read the temperature of the thermometer, and then, 30 minutes later, I would read it again, and so on for a nine or ten-hour period. If the eggs within this box were developing any heat, that heat would be confined in there for all practical purposes; it would be confined, could not escape, and the temperature of the thermometer would rise.

Now, with that explanation, I would like to call your

attention to the chart itself. On the left-hand column here I have listed the number of days that the eggs were in the incubator at the time they were subjected to this test. The first line at the top, they were in there three days.

30 minutes later—

The Court: You mean they had been in the incubator three days before you put them in the box?

The Witness: They had been in incubation in the regular manner.

[fol. 74] Q. That is, they were three-day old eggs?

The Court: Yes; all right.

The witness resumed: 30 minutes after they were placed in there, the fever thermometer—or 30 minutes afterward, the fever thermometer had a reading of 98.1. 30 minutes later, or in a one-hour period, it was 98.2; and during the remainder of the nine hours in which we kept this record, there was no further increase in temperature. Now, that 98.2 is below the temperature of the incubator. The temperature of the incubator during all this test was 99.

Now, at the sixth day period, after it had been in there for 30 minutes, the temperature was 98, and at a later period we had a reading of 98.1, but that is as high as it got. The nine-day period, after it had been in there for 30 minutes, it was 98.4, and that did not increase until at the end of the nine-hour period, when it registered one-tenth degree higher.

On the ten-day eggs, we began to see heat development, being 98.3, 30 minutes after it was placed in the box, but it reached 99 after it had been in there seven hours, and by the time it had been in there eight hours, it was 99.1.

Now, the intervening days from the start of the hatch up to the tenth, records were taken on each day, but they are not recorded here because they showed the same characteristics as are shown in this chart for the three, six and nine-day eggs; but beginning with the eleventh day, we have considerable heat developed.

On the twelve-day eggs, you will note that the temperature, in nine hours, rose to 100.4. On 15-day eggs, you [fol. 75] will note it raised to 103.6. On 17-day eggs, it rose to 107.3. On the 18 and 19 days, you will note that it did not get as high, only reaching 104.6 on the 18-day,

and 104.3 on the 19-day. That is the point of this depression in my heat unit curve on Exhibit 3.

On the 21-day, you will note that there are two records made there. The first one was made on fertile eggs that had not pipped at the time they were started. These would be put in on the morning of the 21st day, and in that condition, the temperature rose to 107.6 in nine hours; but if the eggs had pipped at the time they were placed in there, we found the temperature went up higher.

I have performed experiments corresponding to the eggs not pipped, and also eggs pipped, when the temperature ran up even higher than 111 in a shorter period. The amount of heat development would vary. This shows that prior to the 10th day period, the eggs are cooler than the incubator temperature, requiring heat. Heat must be added, but after that period, the eggs become exothermic and give off heat. And that is true of the eggs as far as the 17th day.

The chart thus identified by the witness showing heat developed while incubating eggs was then offered and admitted in evidence and marked Plaintiff's Exhibit No. 4-A.

Counsel for the plaintiff likewise offered in evidence a photograph of the apparatus used in making the demonstrations by the witness, which photograph was admitted in evidence and marked, Plaintiff's Exhibit No. 4-B.

The hearing was thereupon adjourned until January 30, 1934, at 10:00 A. M.

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[fol. 76] The hearing was resumed on January 30, 1934, at 10 A. M., with the same appearances as before.

JOSEPH INSKIP TAGGART

The witness, Joseph Inskip Taggart, being recalled, resumed the stand and testified in substance as follows:

Direct examination.

By Mr. Ely:

I am familiar with the condition of the prior practice and the state of the art of incubation before 1915. I became acquainted. because, well, as a boy I saw incubators in use in my home vicinity, and while I was in college, in 190[illegible]

1908 and 1909, I used incubators for the purpose of hatching eggs in the department, there, of zoology, where we were studying embryology; and since that time I have watched the development, from time to time, and since 1922, I have made numerous studies of the early incubators. Asked as to the condition of the prior practice and state of incubation prior to 1915, the witness said: We have been hatching eggs artificially as long as we have history. The Egyptians and the Chinese used artificial incubation as much as two thousand years ago. Much of the early practice back there is shrouded in mystery because they have kept many of their practices secret; but in 1915 the incubators that were in common commercial use were small cabinets when compared with the incubators of today. The average incubator would hold perhaps 150 eggs, some of them going up three to four times that much, but that would [fol. 77] be a fair estimate of the average incubator of that time. In those incubators the eggs were all placed at one level. I mean by "one level," they were placed in a tray just one egg deep. The eggs were scattered over the tray, and this tray was placed in the incubator, which was a cabinet, perhaps 10, 12, 14 inches high, depending upon the make, and might be 30 inches wide, and 24 to 30 inches deep. It was customary for them to stand on legs, somewhat like a table. The heat in these incubators almost universally was applied from above, as they had heating pipes above the eggs, and there was no air movement in these incubators except that produced by convection currents or by ventilation. The eggs were all set at one time, and they were kept in this machine until the entire hatching process was finished; providing they had just one machine, that was their method.

The temperature in these machines was decidedly different from the temperatures in the force draft machines. The thermometer hung above the eggs was from 102, the first week, it might be, and 103 the second week, and 104, sometimes 105, the third week. That is, it was customary to increase the temperatures of these incubators as the hatching progressed.

Now, a thermometer hung below the eggs was anywhere from six to eight degrees colder than the thermometer above the eggs. In other words, there was several degrees difference in temperature between the bottom of the incubator and the top of the incubator.

The top surface of the eggs was naturally warmer than the bottom surface. Of course, it was customary to turn [fol. 78] these eggs at regular intervals, and one of the reasons advanced for turning the eggs was that it was necessary to warm the eggs uniformly. One of the Eastern colleges put out a bulletin on that about 1912, in which they recommended turning the eggs six to eight times a day, the reason being that it would warm the eggs more uniformly. That can be well illustrated by a bulletin that was put out by the United States Government in 1914. I have a copy of it here (producing). This is called Farmers' Bulletin 585, entitled "Natural and artificial incubation of hen eggs," and is edited by the United States Department of Agriculture. This particular copy came from the printing office in 1922. On the inside of the cover sheet it states that it was issued May 8, 1914, and this 1922 is a reprint. On the first page, on the cover page, it shows a typical incubator. In this particular one it shows the drawer removed, showing the chicks hatching and some eggs and egg shells left in there.

Now, if you will turn to page 12, you will see there a picture of the incubator cellar as the experimental form of the Bureau of Animal Industry at Beltsville, Maryland, showing an arrangement of incubators, men testing eggs, thermometer for reading of temperature of the room. You will note that there are six or seven incubators shown. Those are typical incubators of that day.

Now, just to leaf through this bulletin hurriedly; it will give you some idea of the methods of operating. Opposite page 12, there, on page 13, it gives you the temperature to operate the incubators.

It says, "When the bulb of the thermometer rests directly [fol. 79] on the eggs, the temperature is usually held at 101½ degrees to 102 degrees Fahrenheit the first week, 102 to 103 degrees Fahrenheit the second week, and 103 degrees Fahrenheit the third week. While a hanging thermometer is operated at about 102 to 102½ degrees Fahrenheit the first two weeks, and 103 degrees Fahrenheit the last week. At hatching times, the machine will frequently run up to 104 to 105 degrees Fahrenheit without any injury to the chicks."

These incubators required special care and skill in operation. At the bottom of page 12 it states "incubators

quire careful and regular attention which, though simple, is very exacting."

The results usually obtained with this type of incubator varied perhaps more with the operator, due to the operator, than to the particular machine itself. An operator could become skilled with most any machine and get good results; if they gave it very careful attention, they could expect a 50 to 60 or 70 per cent. hatch, depending upon conditions.

The practice with regard to the period of setting the eggs in this incubator was—the eggs were all set at one time; that is, I mean to say you did not have staged incubation. In the summary, which is on page 18, it states, "Do not add fresh eggs to a tray containing eggs which are undergoing incubation." There was a practice of cooling the eggs that was carried on in this type of incubator. In the same summary it states, "cool the eggs once daily, according to the weather, from the seventh to the nineteenth day." It was customary to cool them at least that often, and many [fol. 80] operators cooled them twice a day. The cooling process consisted of opening the door and drawing the tray partially out that sometimes as much as two-thirds of the tray extended out into the room. In other cases, the tray was drawn out entirely and placed on top of the incubator. It was left there from 10 to 30 minutes, depending upon conditions and depending upon the wishes and skill of the operator. Some of them would cool much longer and much more severely than others. The condition of the air within those incubators of this type was that it was still air. There was no movement of the air except by convection currents. The top of the incubator was several degrees warmer than the bottom of the incubator. There was very decided prejudice, that I know of, against drafts. Every precaution was taken to avoid drafts, and they even built special incubator houses or incubator cellars that were built so that they would avoid drafts, even then; on page 11 of this bulletin it gives you a description of the incubator cellar or house, and towards the bottom of that paragraph, it states, "muslin screens on the windows provide good ventilation without draft and at the same time keep the sun from shining on the machines."

It was not possible, in these machines, to practically incubate eggs arranged at different levels, because there were no drafts and they depended upon convection currents

solely. The incubator had decidedly different temperatures at different levels. For example, if we have a temperature of 102 to 103 directly above the eggs, we might have a temperature of 97 below the eggs, and if we would operate the incubator right for one layer of eggs, we would [fol. 81] not have the right temperature for the layer of eggs below it or the layer of eggs above it. Many people tried this, and there was a lot of people thought they had the problem solved, but none of them ever became practical, and there was none of them ever used that I have been able to discover. That is, it was not the practice then to hatch eggs by arranging them at different levels in the incubator. Whether the eggs were shifted or not from either position did not make any difference.

(Counsel for the plaintiff then offered in evidence the bulletin referred to by the witness, which was admitted in evidence and marked "Plaintiff's Exhibit No. 5.")

Other than this bulletin which I have spoken of and showing commercial incubators of the period, I have here a photostatic copy of an advertisement that was put out by the Buckeye Incubator Company in 1915, which shows electrotypes that the Incubator Company could furnish people that were selling these incubators. It states here that they have seven sizes, 60 to 600 eggs. You will note the general style of these incubators: There was only one layer of eggs. They were all lamp-heated. That was not true of all the incubators that were cut; some of them were elctrically heated, but these shown here are all lamp-heated, but that is typical of the small incubators of that time.

Now, there was a number of so-called mammoth incubators at that time. The large number was gained by connecting together a lot of these separate incubators, much as you would connect sectional bookcases. They would deck [fol. 82] them up on top of each other, one, two, three and four decks high. I have an illustration of that, that was put out by the Blue Hen Incubator Company. Here they have quite a number of individual incubators connected together. Each door as shown there represents a separate incubator. Each one has its own thermostat, own ventilation system, own moisture system, and was a separate incubator in itself. They did use, in this case, a unit heater in which they had the same hot water heating plant that supplied heat to

each of the separate machines. Now, there is another feature about this Blue Hen that I want to call your attention to, and it represents a condition in the development of the art. I have stated before that it was customary to carry the temperature in the incubator different each week; that is, change it as the hatching progressed, and in this machine it was recommended that they adjust the temperature right in the top deck for the first week, and in the second week they would move them to the second or middle deck, and the third week they would put them in the bottom deck. You will even note that the bottom deck is deeper than the other two. The reason there was to put in an extra tray below the tray of eggs that you see, for the chicks to go into after they had hatched, and they would keep them in there for a few hours after hatching. They called it a nursery tray. That was a common practice, not only in 1915 but for a number of years afterwards. This particular illustration was prepared in 1922. That was typical of the earlier installations. In those installations, in each cabinet, the eggs were all the same age. There was no connection between [fol. 83] the cabinets whatever, outside of the heating pipes. There was no connection as far as the heat from the eggs in later stages of incubation going up to eggs in the earlier stages; there was no utilization made of that.

By the Court:

Q. There could not be differences in temperature in those three layers?

A. Yes, sir.

Q. Well, how would you take your eggs from the bottom layer; the first week, and the third week, they would be in the middle layer, which would be, perhaps, a cooler temperature instead of a higher temperature?

A. They would be in the top layer the first week, the middle layer the second week, the bottom layer the third. That was largely offset by the circulation of the water; the water that they were using for heating these cabinets, the warmest water would go to the top.

Q. In other words, you do not put them all in at one time; you put them in separate weeks, the eggs?

A. Yes, sir. As they would start, they would fill the top deck, and then, the second week, they would move those down to the second deck and set a new batch in the top

deck, and then, the third week, they would move them down to the bottom deck.

Q. In that way, you could not fill all three decks at one time?

A. No, sir.

By Mr. Ely:

There was no communication, as far as the transfer of heat, from the eggs in the lower series of cabinets up to the eggs in the other cabinets. That is, the heat in each cabinet and the air condition of each cabinet was individual to [fol. 84] that cabinet, and individual to that age of eggs that was in that cabinet. That cabinet has its own thermostat and own controls. The hatching was carried on in this lower series of compartments. That is, it was not new to hatch eggs in a separate compartment from that in which the major portion of the incubation operation took place.

Asked in what respect this prior art resembled or differed from the practice of the hen on the nest, the witness said: They simulated the hen, copied after the hen in every way that they could. It was the teaching of the time that an incubator had not been built or could not be built that would be superior to the hen in her nest. She sat on eggs all of thhe same age. Her body was around 105 to 106 at the start. She warmed the eggs from above. The temperature below the eggs was considerably cooler than her body, and she avoided drafts by keeping the eggs closely covered; and she would leave her nest once or twice a day for food and water, during which time the eggs would be cooled, and she would turn them by a shuffling or rolling process with her feet or beak. She conserved moisture by keeping them covered all the time; and the early incubators did everything that they could to follow the hen. They used the hen as their model, and the literature regarding incubators at that time, and even after that time, among the people who were manufacturing this type of incubator, talked about how they follow the hen, how they follow Mother Nature.

Counsel for the plaintiff then offered in evidence the electrotypes of the Buckeye Incubator Company, identified [fol. 85] by the witness and the same were admitted in evidence and marked "Plaintiff's Exhibit No. 6".

Counsel for the plaintiff then offered in evidence the electrotypes of the Blue Hen, multiple deck incubator identified by the witness and the same were admitted in evidence and marked "Plaintiff's Exhibit No. 7".

The Witness then resumed:

As to this defendant and its practice, it early followed this type of incubator construction which we have shown in Exhibits 6 and 7. I have literature showing what this plaintiff used to do. I have catalogs that were supplied to us by the defendant. The oldest one here goes back to 1924, or at least that is the date—yes, it is copyright in 1924; and is the last one in the—the back one—this blue one, on the inside page, it states it was copyright in 1924. On page 4 it shows a type of incubator that they were marketing at that time. You will note this one was four decks high. It differs from the others in regard to ventilation, slightly. There is no space in between the decks; one deck sits directly on the other. That incubator there is known as a 23,040—egg machine. The individual compartments were 180 eggs apiece. This James Way Incubator Book is known as the 64th edition, and is dated May 14, 1928.

The Court: Fourth edition, issued 1927, it says.

[fol. 86] Mr. Ely: I guess it is the same; perhaps a reprint, your Honor.

The Court: It says 1927.

Mr. Ely: Well, it does not make any difference, 1927 or 1928. I guess you probably have a different edition. It is the same thing, I think.

The Court: It seems to be the same.

The Witness: On page 4 they show a picture of the same machine, but the cross-section Mr. Ely referred to is shown on page 27 of that book. This cross-section is labeled as "End section of the James Way with manifold housing removed showing the vertical air shaft and fresh air intakes".

You will note that this shows four separate machines. There are four separate incubators. The ventilation shaft is up the center, and there is entrance into each machine and into each cabinet at the bottom, and the arrows indicate the convection air movement that crosses up through the eggs and passes out at the top. This ventilation is controlled by the damper on the outside of each section.

There were convection currents that went through there, convection currents only—no forced draft, none whatever. The eggs were all at one level and they were all in the same stage of incubation. The heat was applied from above. Ventilation and cooling from below. The eggs were not hatched in different levels; they were not arranged in different levels in the cabinet. Each cabinet is individual [fol. 87] and separate from the others. They advocated at that time, 1928—this defendant advocated following nature's way, vigorously. I will point out in the catalogs where they talk about following nature's way, and also where they condemn forced draft. On the top of this page 27, it states, "Nature's way of supplying fresh air", and at the fourth paragraph it states "the air movement in this shaft is continuous, natural and certain, making it unnecessary to use electric fans or other mechanical devices of any kind."

Now, if you will just turn back one page, to page 24, you will note right at the top of the page, "as Mother Nature intended, heat from above, moisture from below, ventilation from the side."

Now, this same statement appears in a number of catalogs. For example, in the very next catalog, which has a green back, if you will look at the back cover page or on the inside of the back cover page, it states in a bold type "as Mother Nature intended, heat from above, moisture from below, ventilation from the side."

In one of their very latest catalogs, which is the first one in front of the orange or the yellow one that we have just been looking at—in the right hand column of page 33, which is entitled "abundant fresh air", in the second sentence of that, it states, "in the James Way the air is gently moved through the compartment without draft".

As to what date these defendants were sticking to the old still air machine and knocking the forced draft machine—well, since 1929 they have been manufacturing both types. [fol. 88] This latest catalog which I have just read from is describing the conditions as existed in the still air machine. And they were finally converted to this forced draft machine about 1929. The Smith incubator, as it is now sold, had then been on the market about seven years, but incubators under the patent had been on the market for twelve years. And during all this time, these people opposed to

the forced draft machine, as I have shown. I have some bulletins that they put out about that. This bulletin is entitled "Profits in Baby Chicks, or How to Conduct a Successful Hatchery." It was edited by Dr. J. C. Crum, who at that time was manager of the Poultry Division, Elmira, N. Y., branch of the James Way Farm Engineers and James Way Manufacturing Company. It is copyrighted by James Manufacturing Company in 1924.

I call attention to page 10, which started out with, "What Type of Incubator" and in the second paragraph it states, "There are two distinct types of incubators, and each one has its own following. The sectional incubator is well known and has been proven over a period of years. This type of incubator more nearly approaches the natural hen method, and will turn out a chick of highest quality. The air enters the bottom of the egg compartment, the heat is supplied from above, and thus the top of the egg is always warmer than the bottom, thus duplicating the method of nature.

This type of incubator is simple to operate, is flexible and elastic, to meet the operator's growing needs; is devoid of electrical and mechanical devices, hatches chicks in large numbers; and last but not least, the chicks produced are of [fol. 89] a quality calculated to please the purchaser and prove a lasting advertisement to the hatchery man. The James Way represents this type in its highest form of development.

Then there is the cabinet type of incubator. The cabinet type is a large cabinet or chamber in which the eggs are suspended in trays or hangers of various kinds. This type requires the installation of an electric fan in the top of the chamber to drive heat downward, to maintain as near a uniform degree of temperature in the cabinet as is possible in this type of machine. This means the same temperature on the top and bottom of the eggs, which is contrary to Mother Nature's method, and which manifestly affects the quality of the chicks. It also requires an uninterrupted electric service and the expense of current." That comparison between the two types was published by this defendant in 1924. That picture shows Dr. Crum standing beside the type of machine most nearly equal to the natural hen method of hatching. There were two schools of thought in this problem of artificial incubation. Prior to 1915 there was just the one school of thought, and that was

to copy Mother Nature as closely as possible, as described in this James Way incubator. The other school of thought was started by Dr. Smith, in which they were placing eggs in columns in the machine, had different layers of eggs, and had the eggs in staged incubation, and applying forced draft through the machines constantly.

In the early stages, there was considerable discussion along both lines. This defendant persisted in the Nature method or the hen method until 1929. Then, in 1929, he [fol. 90] shifted over to the other school of thought. As to those who adhered to the first school of thought, or Nature school of thought, as a practical matter, they practically all have passed out of business. There are very few of them still operating, and those that are, are not doing very much in that line. Several of them have gone out of business in the last two or three years.

Counsel for the plaintiff then offered in evidence this booklet, and particularly the cover page and page 10 of this booklet to which the witness has just referred and the same was admitted in evidence and marked "Plaintiff's Exhibit 8".

(Bulletin entitled, "Profit in baby chicks, etc.," marked "Plaintiff's Exhibit No. 8.")

The Witness then resumed:

When these incubators were built up in the sectional bookcase form, the disadvantages of that scheme of getting large production were, well, they took up so much room, as even in the four-deck machine, there could only be eggs arranged at four different layers, and it covered a large area. That is, to get any capacity of any consequence, it covered a large area; and one of the principal disadvantages was that it required a special building of houses; you could not have the sun shine on the machine, and you could not have drafts on the machine. If drafts blew against one side of the machine, it would cause a difference in temperature in [fol. 91] there. They depended solely on convection currents to keep the temperature uniform at the different levels in the machine; so it was the custom to build special incubator houses or incubator cellars.

Then the heating problem was quite extensive. It required considerable fuel, not only to heat the building but

also to heat the incubator. It required lots of labor, in that each individual compartment had to be checked and the temperature had to be regulated in there, and it was customary to start the rounds every few hours and read all the thermometers, a thermometer for each 150 to 200 eggs in the machine. It was the practice, in most of those machines, to cool them once or twice daily, and it required hours in incubators of any decided capacity.

I am familiar with the Smith Patent in suit. I have made a special study of it, and I have testified regarding it in different patent litigations, and am familiar with the patent. This patent calls for an improved apparatus and method; is designed particularly for extensive operations wherein they have a chamber of large dimensions. It calls especially for eggs arranged at different levels and eggs in different stages of incubation, and for the application to those eggs of a forced draft, not an ordinary draft, but a draft of sufficient velocity to keep the temperature substantially uniform throughout the cabinet.

Explaining the meaning of "arranging the eggs at different levels," the witness said: Prior to this patent, or prior to Dr. Smith's work, no one had successfully been able to arrange eggs at different levels in the same cabinet. There had been many attempts at it, but no one had been [fol. 92] able to build a successful incubator where they had eggs at different levels in the same machine. In the old style machines they could not do that, because convection currents would keep the temperature different at different levels; and Dr. Smith overcame this by putting eggs in there in several different levels, and then applying to those a draft of air that would keep the temperature the same on all sides of the egg, which was the reverse of the teaching up to that time, the reverse of the teaching of nature.

When the incubator is filled, the eggs are arranged in columns, or in stacks. The trays are in stacks, so that there may be quite a number of different levels. Dr. Smith has built them as many as 22 levels high—that is, in tiers, I mean. That is what I mean by "arranging in different levels". Staged incubation means that there are, in the machine, eggs in different stages of incubation or different stages of hatching. It was not the practice, prior to Dr. Smith's invention, to put the eggs in the incubator in dif-

ferent stages of incubation. They all had to be the same stage, because they thought it was necessary to change the temperature as the incubation progressed; and you will remember, the Government Bulletin cautioned them against adding any fresh eggs to the incubator after it had once been started.

When the incubator was full, you would have eggs in several different stages of incubation, as outlined here; you would have eggs in four to five different stages of incubation.

With regard to circulation of air: Commencing with line 40 on the first page, it states:

[fol. 93] "The temperature of circulating air should be such as will prevent the eggs in the early stage of incubation from falling below 100 degrees and the speed or velocity of the circulating air should be such as to carry the heat away from the eggs in the later stage of incubation and thereby hold the temperature of those eggs at 105 degrees or slightly below that. It is manifest that the temperature will remain practically the same throughout the column of eggs, but the air is impelled with sufficient velocity to carry the heat away from the eggs which happen to be in the advanced stage of incubation."

The eggs in the earlier stages of incubation, when they are subjected to drafts, are warmed by the heat that is given off from the eggs in the later stages, and the converse is true: The eggs in the later stages of incubation are cooled by the heat-absorbing properties of the eggs in the earlier stages. That is a useful function, as far as eggs in the later stages of incubation are concerned, that is, the cooling effect of the cool eggs—very much so.

By the Court:

Q. It says here, "The air is impelled with sufficient velocity to carry it away from the eggs which happen to be in the advanced stage of incubation." Now, is it carried away at a greater velocity where the eggs are at an advanced stage of incubation than it is in the case of those in the less advanced stage of incubation?

A. The warmer the egg, the more rapidly it will give off its heat to the air that passes over it.

Q. Then that tends to increase the circulation of air against the eggs in the more advanced stages of incubation? [fol. 94] A. Not necessarily, no. That is, the air circulates uniformly, or with comparative uniformity throughout the machine.

The Witness resumed under the direct examination by Mr. Ely:

That current of air carries heat away from all of the eggs that are giving off heat. The age of those eggs is from the tenth to the eleventh day. Any eggs that happen to be in the cabinet, that are cooler, will pick up heat from the air, as the air picks up heat from warmer objects and the air is moving, diffusing together, and the heat units will be given up to the cooler objects. I say any eggs that happen to be in the cabinet, that are cooler; the eggs that are there in the cabinet that are cooler are those that are under the ten-day period of incubation. That is, in carrying out the Smith process, you have eggs that are cooler, eggs that are absorbing heat, and eggs that are giving up heat.

In the preferred method as described by Smith, he places the cooler eggs in the top of the cabinet. That is, he set his first eggs in the trays at the very top, and these eggs were left in horizontal position, because at that time it was the teaching not to turn the eggs the first few days. It was not considered necessary, and it is not necessary yet today, but it has become general custom to do it, but they were not turned, and they were put in that position, and then, as the turning racks immediately follow—these are perhaps shown better in Fig. 3, where those from the horizontal trays at the top were moved into the trays immediately below, and at certain periods, it was Smith's [fol. 95] plan, in his preferred apparatus, to move those downward, and in the last three days they occupied the bottom of the column, where they could hatch out without dirting up any eggs below them. At the time of hatching there is considerable dirt there, such as droppings from the chicks and particles of shell.

By the Court:

Q. How were the eggs moved in the crates? I can see how the crates are shifted, but it does not occur to me just how the eggs themselves are turned in the crates.

A. There are individual trays, as you will note at the bottom in Fig. 2 on the first page. These trays were a mesh bottom tray, and you will note that the eggs are placed on the little end. Smith was the first to recommend this general practice of placing or traying the eggs on the little end. Then those trays were slid in the racks, and when the trays are level, as shown in the central column in Fig. 3, the tray can be pulled in and out without any difficulty; and if the tray is pulled out, you simply have the receptacle there, the same as a bureau if the drawers are taken out.

Q. How do you turn the eggs?

A. The turning is accomplished by pulling down one side of this rack. You will note that these racks here are pivoted at the top, and there are side members to that rack which are again pivoted on all the cros members, and you can pull down one side and one side goes down, the other side goes up.

Q. I still do not see how you turn the eggs?

[fol. 96] A. When first placed in, they are standing on the little end. Now, if you pull one side down, the egg will then be standing at approximately a 45 degree angle on the little end, and when it is pulled down to the other side, it flops over to the other angle, making from 75 to 90 degree turn. The illustration shown here does not give it that much of a turn, but that has always been the practice.

The Witness resumed under direct examination by Mr. Ely:

Now, that is imitating the shuffling of the eggs on the nest by the hen. It accomplishes the same purpose. Smith was the first to do that, however, in any quantity. As a mattter of fact, he has a patent on this very device.

I said that in the old style incubator, you turned the egg over to expose it equally to the heat that was coming from above. That is, the heat was applied from above, and so you turned your egg over like you turn a pancake over. In the old style incubator that had other purposes than simply turning the egg over. That was only part of the story. It is necessary to disturb the egg, turn it from one position to another, in order to have the embryo developed properly.

Now, it is possible to hatch some eggs without turning during the entire period, but your hatch is greatly in-

creased if you do disturb them and turn them from time to time, even though the heat is kept proper all the time. So that there are two reasons for turning the eggs, or exercising the embryo, as it is sometimes referred to.

In both practices, or under the old art there were two [fol. 97] reasons for turning. In Smith there is only one reason for turning. That is to exercise the embryo, or to prevent the embryo from becoming stuck at one point. It develops much better if it is disturbed in the shell from time to time. The other reason does not apply with regard to Smith, because we have heat uniformly distributed about the egg all the time; that is, the top of the egg and the bottom of the egg are the same temperature. Now, with regard to the division of the eggs between endothermic and exothermic eggs, I mean by those terms, just for the sake of the record, endothermic eggs are eggs that are taking up heat. That is, they require heat to keep them up to incubating temperature. Exothermic means they are giving off heat; they have to be cooled.

Referring particularly to Exhibit 3, as a matter of illustration, in the Smith structure, in the Smith preferred method as shown, or preferred apparatus, there are approximately half of the eggs that are in the endothermic period, or in this period when they are requiring heat, absorbing heat, and there are the other half of the eggs that are in the exothermic; they are giving off heat.

Now, in the condition where you have eggs from one to 21 days in the same cabinet, there is very much more required, or very much more heat given off by the eggs in the exothermic stage than there is heat absorbed by the endothermic stage. So that you have a great deal more heat given off by the hot eggs than is required to bring the cold eggs up to and maintain them at incubating temperature. And that is a great deal of excess if you carry them the full 21 days. If you carry them in the cabinet too, say, 17½ [fol. 98] days, you still have excess heat over that required, to bring the earlier eggs up to and maintain them at incubating temperature. As to this matter of the air circulation, secured in the Smith machine, in this preferred apparatus that is illustrated here by Smith, he circulated the air by means of propeller fans. These fans were placed in the top of the cabinet, near the heating pipes. The heating

pipes are shown on both sides of the fan. The air was caused to circulate down the corridor to a point near the bottom, where it passed into the egg chambers at each side. Thence it would move upward through the egg chambers and back into the fan compartment, where it would be recirculated.

Asked to show how the circuit is completed, the witness said: On the second page of the patent, starting in with line 18, it states, "The longitudinal space 21 above the fans has open communication above the side walls 22 with the upper ends of the rack compartments behind the curtains 3 and 4."

While that communication is not shown clearly on this Fig. 1, yet the patent states that there was an open communication between the egg compartments and the compartment immediately around the fan. The space where the air returns to the fan chamber from the column of eggs is on each side of the fan compartments and is directly over the supports that are shown on each side of the fan compartment. It is not shown clearly here in this, but it is stated that they are there, and the arrangement is made so the air passing up through there, up through the egg compartments, is drawn back into the fan and recirculated

[fol. 99] Now, there is a provision for a certain amount of this air to escape through the opening 28. Now, there is only one of those openings above each egg compartment. Just a brief reference to Fig. 3 shows that there is only one opening 28 above the egg compartment, and that, of course, is a very small portion of the ceiling above the egg compartment.

Now, immediately above the fan there is an opening for the intake of fresh air. You will note that there are two slides, one shown on either side, and it shows this opening decidedly restricted. Now, those are adjustable so that the amount of air that the fan is continuously taking is controlled.

Now, of course, only as much air can escape as fresh air is taken in. That is, if the slides above the fan were completely closed, there would be no escape through 28, as all the air would be circulated over and over again.

A certain amount of fresh air is necessary for supplying sufficient oxygen and carrying off the carbon dioxide, but the amount of fresh air must be controlled. If we took in

a complete charge of fresh air all the time, and blew out through the corridor, and out through the egg trays, and then out of the incubator, it would require an immense amount of heat, and would require very special apparatus to hold the temperature proper, and then what is still greater, it would be a very expensive problem to keep the humidity of that air at the proper place. The humidity of the air in the incubator is very much higher than the humidity of the air in the average room, and in order to maintain that high humidity, it would be quite expensive; [fol. 100] and so, rather than blowing all that humidified air out, the humidified air is worked over and over again, in repeated cycles, only adding as much fresh air as is necessary to keep the oxygen contents proper.

Now, Smith also provided a moisture jet in the fan compartment. This moisture jet, as he supplied, it, was of steam. There was live steam entering there, and the amount of live steam that was brought in was controlled so that it was sufficient to humidify this equal amount of fresh air that came in.

Now, in actual operations of our present machines, the amount of fresh air that is taken in on each cycle is only about one half of one per cent. of the air that is being in continuous operation. Now, this per cent. is varied from time to time, sometimes as much as three per cent., but it has always been quite small. In the earlier history of the practice of the Smith incubator, the percentage of air interchanged was considerably greater than it is today. It was perhaps two to three per cent., constantly. Smith was using steam for humidity, and he could supply it in any quantity he wanted to, and the exchange or the fresh air coming in was about three per cent.

The eggs themselves supply some of the humidity. The evaporation of the moisture from the eggs is quite a factor. It is very important that it be controlled, as you can not evaporate rapidly a part of the time and then slowly another part, successfully. The plan is to control it within certain limits all the time; that is, moisture that has once evaporated from the egg cannot be put back into the egg again. And yet you have the problem, in this incubator of [fol. 101] supplying fresh air. There was reference yesterday to the matter of conservation of moisture; how the moisture is conserved in the Smith machine. The phrase

was used "whereby the moisture is conserved,"—that moisture is conserved by controlling the amount of fresh air that is taken in and holding that down to a point where we do not carry out an excess of moisture out of the machine. That is, if you carry out an excess of moisture, you might be in danger of drying the eggs too fast for successful incubation.

I call his Honor's attention to the point where the patent describes the regulation of air interchange. The percentage of air interchange is controlled by the regulation—line 43, on page 2: "The outlets 28 for the release of foul air are made of such restricted capacity as to prevent the undue escape of moisture." You get the control of percentage of air interchange by controlling the amount that is taken in. I call his Honor's attention to that point in the patent, that refers to that, page 2, beginning at line 39. "More or less fresh air may be taken in through the valved opening 24 above the space 21." In other words, the amount or percentage of air interchange is not fixed in the Smith patent. If the inlet opening is completely closed, no air will be discharged, because if you are not taking in any quantity of air, you cannot discharge it, but if you open it so that you are taking in 20 cu. ft. a minute, there will be a corresponding amount discharged. If it is 10 cu. ft. a minute, there will be, of course, the corresponding amount discharged, and you can control the amount of air that is going out of the machine either by throttling the exhaust or by throttling the intake.

[fol. 102] It does not make any difference in the actual operation as to whether you throttle the exhaust or throttle the intake. That is because the atmospheric pressure remains the same in the incubator as outside. The fact that you have a restricted outlet and are only interchanging a very small percentage of the air, means that all the air that is not exhausted must pass back into the fans and be recirculated. And in the normal operation of the Smith incubator, say, today, the percentage of the total volume of air making this recycle or recircuit is over 99 percent. of it. Over 99 percent. of the air goes around again through the machine, and repeatedly through it.

In a little earlier period of the operation of the Smith incubator, it varied from 98, 97 percent., sometimes smaller, or as much as 99 percent. It depended upon certain condi-

tions within the machine and within the room, outside temperature and things of that nature.

Asked what was the effect of the recycling of the air on the order and arrangement of eggs, the witness said: The fact that the air is being moved continuously through the columns of eggs and brought in contact with all the eggs—it makes no difference what the arrangement is, as to whether they pick up the heat or give up the heat to the air. It depends upon the temperature of the egg and the temperature of the air solely. If you have an exothermic egg at one point,—and the air naturally has to be cooler than the exothermic egg—the heat will be picked up by that air; and if you have at another point in the cycle endothermic eggs, heat will be given up to those eggs. It is, therefore, not necessary to carry out the transfer of heat from the [fol. 103] eggs in the later stages of incubation to those in the earlier stages of incubation. It is not necessary, in order to accomplish that function, that the air, as it leaves the fan, shall strike the oldest eggs first.

Asked what variations could be had in that arrangement, the witness said: If your air is moving in cycles, you have a propelling force at one point. That is not the start of the cycle, necessarily. It depends upon where you want to start in the cycle. You can have your hottest eggs at the top of the incubator. The air would be drawn right over into the fan and carried to the bottom. For example, if you had your freshest eggs at the bottom of the machine, they would naturally be the coolest. If your hottest eggs were at the top, that heat would be carried through the fan and down on to the bottom eggs that way. There are innumerable variations that you would think of, that you might have: hot and cold eggs sandwiched, or any particular arrangement that you wanted to. As long as the air is moving in substantially closed cycles, and moving with sufficient velocity, it will carry the heat away from the eggs that are giving up heat and will deliver it up to the eggs that are absorbing the heat.

By the Court:

Q. Well, under that same theory, you could put eggs of a different stage of incubation in the same tray, could you not?

A. Yes, sir, that has been done.

The witness resumed under direct examination by Mr. Ely:

It is not convenient, but it could be done. You could put those trays anywhere you wanted to, mix them up, I mean, [fol. 104] put them in any order you wanted to. It has been done. The heat is adjusted between the heat from the eggs and the heat that is turned on, that is what I mean. The circulating air is the medium for carrying the heat and keeping the temperature substantially uniform. Regulated as to the egg by the heat going out or coming in to the egg and contact with the outside air. Of course, in all practical operations, you have to have some controlling means, and it is customary in all machines to put a little bit more refrigeration into the machines than is absolutely required, and then have thermostatic controller of heat, to add just enough to keep it the right temperature. That is to say with that condition, there is a certain balance more or less evently maintained between the endothermic and exothermic condition of the eggs. You have to check the temperature of the air. That is, some heat may be lost by radiation or carried out by the small portion of air, or foul air, that goes out of the machine, some heat is taken out, and it is necessary to check that.

It is a fact, that the eggs in the later stages of incubation really do work, that is, really supply heat for the incubation of the fresher eggs. It is very decidedly a fact. In a cabinet machine of this kind, the fuel consumption is decidedly less than it is in the old style machine. There is another factor, that these heat requirements or the thermal characteristics of the endothermic and the exothermic eggs are fixed by Nature. That has a bearing upon successful incubation in this process. I will explain that a little. It is natural for the temperature within the egg to increase [fol. 105] slightly as the different periods advance, and this heat that is given off, we cannot take it all away from the egg. That is, the eggs in the later stages are warmer than the incubator, and we cannot take all the heat away. We can only cool it down to somewhere near the room temperature, or the incubator air temperature, and the eggs that are in the earlier stages, we cannot bring them right up to the incubator temperature, because they have a cooling, refrigerating action of their own.

Now, by circulating the air around all of them, we still maintain that characteristic in the eggs that the hen had, in which the temperature of her eggs would increase as the hatching progressed. The endothermic requirements of the eggs in the earlier stage of incubation are fixed by nature. The heat which is given off by eggs in the later stages of incubation is also fixed by nature.

Now, those two things being fixed, we make use, in this process of fixed laws of nature with regard to heat generation and heat absorption. Dr. Smith was the first man to put to use successfully that phenomenon of nature. It has been recognized for hundreds of years that it was present, but Dr. Smith in his patent, was the first to put that phenomenon to successful use.

Following out that idea about the order of arrangement of eggs, about affecting the heat transferring property of the current of air, it does not make any difference for practical results of the Smith method, whether the eggs are shifted or not during the process of incubation. The fact that the heat will transfer, regardless of position or location, it would be a natural corollary that it is not necessary to shift the eggs to different positions in order to carry out [fol. 106] the process. And so long as the eggs remain in the tiers or different levels, the arrangement of eggs, or the shifting of eggs, or non-shifting of eggs, or arrangement of eggs, with regard to carrying out the heat-transferring properties, it makes no difference on that part. It is simply a matter of convenience.

Incubators are made under this Smith Patent by the Smith Incubator Company of Cleveland, and by the Buckeye Incubator Company which has its factory at Springfield and now has its offices in Cleveland. Smith Incubator Company at the present time manufactures what is known as a 30,000 egg machine, a 39,000 eggs machine, a 52,000 egg machine and a 65,000 egg machine. The Buckeye Company, under this patent, manufactures sizes of less than 16,500 eggs; that is, they make a number of different sizes, but their license permits them an exclusive right under the patent to all sizes from 16,500 eggs down.

Now, with respect to the commercial Smith machine and the commercial Buckeye, the principle of turning the eggs is the same. It is not necessary to turn the eggs clear over. It is necessary to disturb them a certain amount so that

the embryo within the shell will shift, but the tilting racks that are used on the Buckeye machine are similar to those that are shown in the patent, and they are covered by a separate patent by Dr. Smith. In the commercial Smith incubator, we use a different method of suspending the trays. They are suspended on chains, but the tilting principle is the same. That is, an egg is turned to a 45 degree angle one way for a period and then turned to a 45 degree angle at another period, and the turning process takes place at different times daily.

[fol. 107] By the Court:

Q. I understand you to say it was not necessary to turn them.

A. It is not necessary to turn them clear over. It is necessary to disturb the eggs.

The Court: I understand your Counsel's question to be whether it was necessary to turn them.

Mr. Ely: I think, your Honor, I asked the question as to the shifting the eggs. What did you understand I meant by shifting the eggs during the process?

The Witness: I meant that it was not necessary to change the eggs from one level in the machine to another level during the process of hatching.

The Court: I understood you to put the question both ways, shifting and also turning.

Mr. Ely: No, I did not intend to, your Honor.

The Witness: Some eggs will hatch if they are not disturbed at all during the process, but we get a much better percentage of hatching if we do disturb them.

The witness resumed under direct examination by Mr. Ely:

Referring to the shifting of eggs, the movement of eggs at various stages of incubation in the column—it is not necessary that the eggs be shifted in that meaning of the word, in order that this heat transference may take place. It is not necessary to be put in at one level at one period and [fol. 108] then at another level for another period. And actual incubators are made and operated under this patent where the eggs are not so shifted from one position in the column to another while the incubating process is in progress.

Buckeye Incubator Company manufactures several machines, that is, several different sizes, where the eggs are put in these turning racks and left in there for 18 days, when they no longer need to be turned, and then they are taken out and put in trays where they are kept in horizontal position. I might say that, in these turning racks, the tray of eggs is never level unless it is being worked; that is, the tray of eggs is always tilted at an angle of 45 degrees. That is its normal position, either to one side or to the other; but when it is no longer necessary to turn the eggs, then they take them from the turning racks and put them into another position where the trays can be level and where the chicks actually emerge from the shell.

The Court: In the same enclosure, you mean?

The Witness: Yes, sir. Some of them are in the same enclosure; sometimes they take them out of that enclosure and put them in another enclosure for the hatching process of the chicks coming out.

Q. Now, in the turning process, in this type of Buckeye machine, after the tray of eggs is once set in the racks, is that tray of eggs moved until it is necessary to take them out for hatching process?

A. The tray of eggs is not moved to another level at all [fol. 109] until it is necessary to take them out. The tray is tilted in the turning process, but that is the only movement.

Q. Do you have a booklet of the Buckeye Incubator Company that touches upon that point, Mr. Taggart?

A. Yes, sir.

Q. You have not it there?

A. I don't have it here.

Q. Do you know where you can put your hand on it?

A. (Witness produces booklet.)

Q. Just call his Honor's attention to that; explain what this booklet is first, and the page you want to refer to, and so forth.

A. This is an operator book for the Buckeye All-electric Mammoth Incubator, Models 46-3, 47-3, 48-3, 49-3, 1931-1932 edition, put out by Buckeye Incubator Company, Cleveland, Ohio.

I call your attention to page 12 at the top of the page; it says "General operation of incubator: The incubator should never be filled to full capacity on any one day. The

eggs must always be set in the incubator in the following manner, and it is extremely important that these instructions should be closely followed. Each weekly setting will consist of one-third of the eggs trays in the incubator. Note accompanying illustration. First week, blue; second week, red; third week, white."

I might state that this blue, red and white refers to tags that they place on the trays so that they can tell what stage of incubation they are in. All eggs that are set at one week would be labeled blue, another week white, and another week red.

The Court: Why can you not put them in all at once? What is the reason you cannot put them all in at once?

[fol. 110] The Witness: If you were to fill the incubator in one day, it requires a considerable heat to bring it up to temperature and to hold it there for the first ten days, and after that it begins to generate heat and it is quite difficult to get enough refrigeration into machine to keep the temperature down, and it is not practical, from a commercial standpoint, to attempt to do that, and it has been tried repeatedly, but it is very difficult to control the temperature from 15th, 16th and 17th day.

Q. That is because all of the eggs in this incubator would then be giving out heat, is that true?

A. Yes, sir.

Q. And there would be no cold eggs in there to absorb that heat?

A. Right. Now, if you will go down just below the middle of the page, there is a paragraph: "The trays of eggs are to be remain as set and must not be moved nor location in the racks changed until the end of the 18th day or the beginning of the 19th day of incubation for each setting."

Q. Now, when that incubator is full of eggs, are the trays of hot and cold eggs sandwiched in the machine?

A. They are. Instead of setting all of a certain age together, they sandwich them, intermingle them.

Q. And with that arrangement, do you get a transfer of heat from the hot to the cold eggs?

A. Yes, sir.

Q. Now, if you set all your eggs at one time in this Buckeye machine or in any machine, you would not have the transfer of heat from hot to cold eggs, would you?

A. No, sir.

[fol. 111] Q. Because all the eggs would be either all cold or all hot, is that right?

A. They would be all stages, so far as thermal heat is concerned.

Q. At any one time, all the eggs in the incubator would be in the one stage of incubation?

A. Yes, sir.

Q. And they would all be giving off heat, if it were along toward the last of the incubation, or they would all be cold at the first?

A. Yes, sir.

Q. And that is what you mean by staged incubation, is it?

A. Yes, sir.

(The operating book for Buckeye All-Electric Mammoth Incubators, 1931-1932 edition was offered and admitted in evidence and marked "Plaintiff's Exhibit No. 9.")

The witness resumed under direct examination by Mr. Ely:

I have some drawings here showing diagrammatically, more or less, a commercial Smith incubator. I will take that chart and explain to the Court the air circulation in the Commercial Smith Incubator. This is a sectional view through the Smith incubator. Much of the detail has been left out for the sake of clearance. You will note that it is a chamber which is divided into a central corridor and egg chambers on each side. At the top of the central corridor, there is a fan compartment in which the fan is located, and on each side of the corridor there are curtains extending to a point near the bottom of the corridor.

[fol. 112] The operation of the machine, so far as air circulation is concerned, is indicated by the arrows. The air is propelled downward from the corridor by the fan. Near the bottom it passess into the egg compartments on both sides, thence upward through these egg compartments, to a point near the ceiling, where it is drawn back again into the fan compartments. You will note on the side of some of these arrows I have figures which indicate the approximate speed of the air at those points, in lineal feet per minute. At the time these tests were taken, the fans were operating at from 1,600 to 1,650 revolutions per minute. The maximum speed that is delivered by a fan of this type

is approximately 1,200 lineal feet. I have one arrow there near the top which is labeled 1,140 feet.

Now, this fan area where the speed is high is only over the surface of the fan. The fan is 16 inches in diameter. Now, by the time that reaches midway in the corridor, this same volume is spread out so that the velocity is very greatly reduced. At the points where it passes underneath the curtain and into the egg compartments, the speed will vary from 200 to 300 feet per minute; thence it passes upward through the egg compartments, and there again you will note that the speed is greatly reduced because you have a much larger area through which it is moving.

The Court: Why does it vary and differ on different sides at the same relative points?

The Witness: You will find it varying at different times even at the same point. The control is not accurate enough [fol. 113] to make it move with the same speed; and furthermore, air moving through channels such as this does not follow the same speed all the time. It becomes turbulent and moves faster at one point than another, and where it returns back into the fan compartment above the speed area is increased again to approximately 500 feet per minute.

The witness resumed under direct examination by Mr. Ely:

The average speed of the air through the egg trays is approximately 75 feet per minute. You will find points, where the air is moving faster than at other points. There are some points where the air actually reverses, eddies back. You will find these eddies practically always just inside the bottom of the curtain, where the air is passing underneath the curtain, immediately above that it is eddying back, and air passing any obstacle is inclined to form eddies around the side of it; and we also find quite a number of eddies in the corridor. As a matter of *fact*, it is full of eddies. Air is a fluid, of course. It is comparable in its movement to the movement of water. All fluids follow certain lines in movement, and we can see water in motion. We cannot see air in motion very well, but a study of the two shows that, in moving, they follow the same laws. There is a difference, of course, because of the viscosity of the two fluids, but water, if it passes an obstacle, we know

it forms certain eddies there. If it is moving through a broad open chanel, it may move smooth and regular, [fol. 114] but the minute it comes to a shallow place, or the channel through which it is moving changes, it changes the nature of its flow. That is, it may be a turbulent current or it may be a linear current. That is, taking it for analogy, say the water in the Niagara River that is flowing in a current toward Niagara Falls. Where the head of the stream is suitable, we will find the current moving in a linear form. It may move faster in the center than it does at the side, or faster in the center on top than it does at the bottom, but nevertheless, different parts are moving along in parallel lines, or substantially so, and we refer to that as a linear current; but if it comes to a place where the channel changes, it may find it becoming very turbulent. It is moving in a current, however, even though it is turbulent.

Turbulence is a characteristic of current movements of fluids. It is a characteristic of all fluids in their movements; that is, after they pass a certain critical velocity point, all fluids become turbulent.

By turbulence, I mean that the different particles of the fluid move forward in irregular sinuous paths. The water or air, when moving in a stream, moves at different speeds at points, even though it may be in a smooth channel.

Even if the bed is perfect, you would expect it to move faster at the center than you do at the sides, or faster on the top than you do on the bottom. It depends on the friction of the particles it comes in contact with. There is no substantial difference in that characteristic of water or air; they both follow the same rule or law. I measured the [fol. 115] speed of these air currents,—these measurements were made with an anemometer. As to how many tests I made in this machine to determine the character and speed of these currents, I expect, thousands. And this has been the result of a check by me of actual current movement in the Smith machine. The maximum air speed is found, directly under the fan, up right at the delivery point of the fan. As to the condition as to the air speed from that point on, the fan delivers a cone charge; that is, the charge spreads as it goes down, and the more the charge spreads, of course, the slower it becomes. The air current has its lowest motion where you have the most area or cross-sec-

tion area to the current. For example, in the egg chambers, the total cross-section area of the two egg chambers in the Smith 52,000 egg machine is 75 to 80 square feet. In the fans, where it is moving the fastest, those fans are only 16 inches in diameter, and there are four of them in the machine, so that the cross-section area there would be four times the 16-inch fan. I have forgotten just exactly what that is, but you have it moving at a rate of less than 1,200 feet per minute there, and by the time you spread that out over 75 square feet cross-section, you greatly reduce the velocity, and it amounts to less than 80 feet per minute that is possible, on the average. Now, as the air passes up through the egg trays, it passes up through the trays or the egg columns to near the top of the incubator, where it passes over the beam, that is shown, that forms each side of the fan chamber. It is going back into the fan chamber at the speed of approximately 500 feet per minute. Now, as the air goes through the egg trays, it naturally follows [fol. 116] the paths of least resistance, but if you will look at the third sheet shown here, which is marked "SS", that is taken in the plane SS as shown on the first one, which would be almost through the center of the egg column, you will note there the trays are represented by the rectangles that are placed in regular manner there. They represent trays, 12 trays high, and between these columns of trays you will note that there are air columns that are formed when the trays are tilted. Most of the air passes up through those air columns. That is the point of least resistance, and, of course, that is where they go. In this drawing, this Fig. 2 represents the side elevation of the corridor with the curtain. It is labeled here "RR", which represents the section through the center of the corridor. That curtain I have shown is shorter than the curtain shown in the patent. This is a correct representation of the Smith incubator as it is made in commercial practice.

As to the reason for shortening the curtain, and when that was done, I can't give you the exact time when it was done, but I have never seen a Smith incubator that had a curtain very much longer than that, in actual operation. We tried it both ways, and it makes very little, if any, difference, and this is our preferred method of using it. Now, with the curtain shortened as you see, there is considerable space above what is known as the hatching tray.

The speed of the air underneath the hatching trays is indicated by the figures on the side of the circle. The circle represents the position of anemometer at the time the readings were taken. The minus sign in the center of this circle indicates that the air is going away from the observer, is [fol. 117] going out from the corridor and into the egg compartment and the numbers on there represent the speed as recorded by those anemometers.

Now, the same is true of the circles that rest on top of the hatching racks, and you will not there the speed is not quite as great, being from 190 to 250 feet per minute.

Now, in actual operation, about one-third of the air comes down the corridor passes underneath these hatching trays, and about two-thirds of it passes between the curtain and the top of the hatching tray. About two-thirds of the air in one circuit, then, will not reach the hatching trays.

Asked as to the foul air outlets and the fresh air intakes, the witness said: In the commercial Smiths that are being placed on the market today, we have, above each fan, a five-inch opening, and above each egg compartment, we have four four-inch openings. I am referring now to the Model 52 size. Now, that would represent the maximum size of those holes. Now, we restrict the intake openings so that only a small percentage of their actual capacity is passing through under normal conditions. We have the larger capacity to take care of extreme weather conditions that we sometimes have in Southern California or in Arizona; and we also restrict the outlets with a valve which will prevent a back-draft in there.

Counsel for the plaintiff then offered in evidence the book containing defendants' catalogs and books of instruction referred to by the witness and the same was admitted in evidence and marked Plaintiff's Exhibit No. 10.

[fol. 118] Counsel for the plaintiff next offered in evidence the drawings of the Smith incubator referred to by the witness, being three sheets of drawings, being a sectional view across the machine through the fan; a diagramatic sectional view along the corridor; and a sectional view in plane parallel to corridor and midway between the front and rear of trays and the same were admitted in evidence and marked respectively Plaintiff's Exhibits 11-A, 11-B and 11-C.

The witness then resumed under direct examination by Mr. Ely:

Taking my copy of the patent in suit just a moment—there is a statement in the patent about the stage of incubation at which the eggs are the most difficult to keep down in temperature. At the bottom of the first column on page two, starting in with line 61 on page two, it says, "so as to compel the air to circulate through the mesh bottom and around and about each egg as heretofore referred to, and as the eggs further advanced in incubation are contained in these lower trays and as the danger is that the temperature will rise in these eggs to a point injurious to incubation the improved method disclosed herein permits the circulating air to act as a medium to prevent the over heating at this stage of incubation."

As described in the preferred apparatus here, the eggs are in the 15, 16, 17, 18 day stage. And that is the stage referred to as the "stage further advanced in incubation". [fol. 119] That is referred to specifically at line 65 on page two. And those are the eggs in which the patent says that the temperature must be kept down particularly. And that is not the hatching eggs he is talking about—not those where the chicks are actually emerging from the shell.

As the fan operates, it throws air out on one side and it pulls it in on another. The quantities of air are equal in both cases. That is, the air that is being pulled into the fan is equal to the quantity of air that is leaving the fan, and it has come to refer to the air that is being drawn into the fan as an induced draft or induced current.

There is a similarity there between the operation, say, of a pump, pumping water. At a pumping station, if you are pumping water, there is a current of water flowing towards the pump. There is also a current of water flowing away from the pump, and the volumes are the same in each case, and it depends on the size of the conduit as to whether the velocities are the same. As a general rule, the current flowing into the pump is less disturbed than the one that is going out from the pump, but nevertheless they are both currents of equal velocity if the pipes are of the same size.

There is more turbulence in the current after it goes through the pumping means, whether it be a fan or whether it be a pump. And an induced current tends to be smoother, depending upon the channel through which both currents

are passing, but if the channel is the same in both cases, the current immediately leaving the fan, for example, is much more turbulent than the one that is flowing into the fan on the opposite side.

[fol. 120] I am asked if there is any advantage in having the eggs subjected to an induced current rather than the one delivered by the fan? That which is delivered by the fan is not uniform over the entire area. That is, it may be at variance at different points, but an induced current is much more uniform; it flows more uniformly throughout the entire area.

Whenever a fan of any description is moving air in closed cycles, or substantially in closed cycles directly in front of the fan, there is no question but what the current is forced. On the opposite side, the current is pulled. Now, if that air is traveling in a cycle, it is always a question as to just how far the forcing carries it and how far the pulling carries it. It makes no difference, so far as completing the cycles is concerned, whether the current is being pulled or being pushed.

Taking this drawing of the Smith incubator, Exhibit No. 11-A, it would be hard to point out the exact place where the induced current begins and the forced current is left off, but the general region of the egg trays is an induced area, or it might be almost a neutral area, as to whether it was induced or forced.

The pulling action of the fan draws the air from the top of the egg chambers, and it is an induced current. It is certainly an induced current in the top of the egg chambers, but whether you would carry that to the bottom tray or not, I am not in a position to say.

Now when the air enters, when the fresh air, this increment of fresh air, enters into the cycle, it enters back of the fan in the induced current. The fan thoroughly mixes and [fol. 121] agitates it so that the cooler air is thoroughly diffused through the mass of air that is already there. And then the cool air, or the increment of fresh air, goes and enters into the recycle from that point on.

The maximum speed with the type of fans that we have showed here is 1,200 feet per minute. As to the amount of air each fan is delivering, the manufacturers of those fans rate them at 1,500 cu. ft. per minute, running in free air;

that is, without any resistance, 1,500 cu. ft. Whenever you put resistance in its way, of course, it slows that up to a greater or less degree. And as the air spreads out through the corridor, and then the egg chambers, the speed of the air decreases.

I am asked if there is, as a matter of fact, any point in the Smith machine where the air reaches any such velocity as 11,000 feet a minute. There certainly is not. The highest velocity that we have is about one-tenth of that. 11,000 feet per minute is considerably over two miles a minute, which would be around 125 or 130 miles an hour. As to what would happen to the eggs in the trays if any such blast of air blew through those eggs—well, we would have a good sized omelet, anyway.

Tornado speed, the highest speed that is given in storms, I believe, is 100 miles an hour. The highest speed that we ever experience in this section of the country is perhaps 70 to 80 miles an hour. Then with a speed of 11,000 feet per minute you would undoubtedly blow that machine all to pieces and blow the building down.

Now I also have some drawings which show the commercial Buckeye machine.

I am familiar with the decision of Judge Westenhaver; I have read the decision and he does not say that air tra- [fol. 122] velled 11,000 feet a minute. He does not say that at all.

Now, taking this drawing—it is a cross section of Buckeye Incubator No. 48. It is drawn to scale. This incubator holds approximately 5,000 eggs. You will note that there is a central corridor having a fan about midway between the floor and the ceiling. In this machine there is no corridor that a man enters or works in. There are doors on each side of the incubator, which open outward, and all the work that the man has to do with the machine is done from the outside. You will note that there are trays arranged at different levels, and they contain eggs in different stages of incubation. In this machine, the Buckeye Company does not recommend that the eggs be placed in one position for a period, and then in another position for another. They put them in these upper turning racks and leave them there for 18 days, and then at the end of that period, they remove them from there and place them in the hatching tray at the bottom. That is a tray where the

eggs can be left level and allowed to remain there during actual emergence from the shell.

The partitions on each side of the fan chamber are wood in this case, and there are no curtains; and you will note that the fan is forcing the air downward in the chamber when there is a passage-way into the egg chambers on each side of the central corridor at the bottom; then the air passes upward through and about the trays, and then is drawn back in at the top of the incubator, at the top of the egg compartment or at the top of the fan compartment [fol. 123] again. This is a small machine and you work it from the outside through the doors.

That machine is manufactured under the patent. And it is a commercial machine.

(Counsel for the plaintiff then offered in evidence drawing of the Buckeye Incubator No. 48 identified by the witness and the same was admitted and marked Plaintiff's Exhibit 12.)

The witness then resumed as follows:

Now, I have here the showing of the first Buckeye machine that was put on the market under this patent, way back in 1917. The size of that machine was 2,440 eggs. Relatively speaking, the machine was approximately four feet high, five feet long, three and one-half feet deep. At that time they advertised both the old type that they had made heretofore, and also this new type. This was the first machine that came on the market.

The first machine that came on the market under the patent. The catalog has been used several times and is not in such good condition. The front page gives a picture of that machine. I might say that this was published in 1917, copyrighted by Buckeye Incubator Company in 1917.

On Page 4 it gives you an idea of the general size and appearance of the machine by the man that is standing near it.

To get an idea of the general arrangement of the machine, we might turn to Page 6. The door is open there [fol. 124] in the center which shows a central compartment with heating pipes. There are fans immediately above that part. There are two fans shown there, as you see the top of them; on Page 4, you notice the operator

has pulled one of the fans up so that you can see the size of it. These were a small fan.

Then, further over, on Page 8, we have a phantom view of this machine. There are egg compartments on each side of a central corridor, the fans at the top, heating coils at the side, and the arrows there indicate the air movement in the machine.

The fresh air intakes were immediately above the fan. As a matter of fact, they were located in the board that was directly above the fan, so that when he lifted the fan out, the holes were located in that board. The exhausts were directly over the egg compartments.

This incubator embodies the Smith process in its operation. It does not have any "man entering corridor", that our friends have talked about.

Counsel for the plaintiff then offered in evidence photostatic copy of the Buckeye Catalog copyrighted in 1917 and the same was admitted and marked Plaintiff's Exhibit No. 13.

The witness then resumed as follows:

I am familiar with the James Way Incubator Hatcher that has been put on the market recently by the defendant in this case.

[fol. 125] I became familiar with it first, through advertisements, and then I had occasion to see them in use, and then the Smith incubator purchased a unit that we have had in our possession for three or four years, and I have used that in regular hatching operations, in preparation for this case. I carried on actual hatching operations in that machine.

I visited the plant of the Elmira Hatcheries in Elmira, New York. I think it was in April, 1930. I found three different incubators in operation there. They were operated as three separate machines. They were 10,000 egg capacity each. One of them was being operated as a gas-heated machine, if I remember correctly, one as an electric-heated and one as an oil-heated, I believe. The machines were substantially identical, with the exception of the heating equipment. And they were identical with the machines which are being put on the market by the James Way Manufacturing Company. And I saw those machines in operation in the Elmira Hatchery.

I cannot give the names right now, but I talked with two or three different people at the Elmira Hatchery. They explained to me how the incubator was run. I have also learned how the James Way incubator is run from an instruction book which they have issued. I have catalogs which show the James Way incubator which is here in suit. The catalogs which were furnished us by the defendant, Plaintiff's Exhibit 10.

If you will open about the middle, you will come to a place where they have the regular catalogs. Now, the first one of those of this type, that will be the one. This [fol. 126] is Book No. 68, and copyrighted in 1929. That is about the time they first came on the market with this machine, to the best of my knowledge.

Perhaps Page 7 will give us a better idea of the incubator. On Page 7 they show the incubator with the hatching compartments at the top. One door of the incubator compartment is open and two of the trays are partially drawn out at the bottom. Above this incubating compartment they have the two hatching compartments which are the old style incubators which they have utilized for the actual emerging of the chicks from the shell. There is nothing particularly new about these two upper compartments. They are the same as they were using before, up to this time. That is a still air type of machine.

Mr. Ely: And that part of the equipment is not in litigation here, your Honor. We are directing our suits to the incubator.

The witness résumed:

On the opposite page, Page 6, it gives you another view of the same equipment. You will note the four doors on the front which open onto the incubating compartments, and then the small sections at the top are nothing more than the old sectional incubators that hold 180 eggs apiece. The eggs are set in that incubator in accordance with that instruction. They are set in staged incubation. You will note that there are ten trays shown in the cabinet that [fol. 127] is open. Each tray holds 210 eggs. Now, they arrange their eggs in this machine at different levels, as they specifically instruct that two trays be set in each compartment, or in a compartment, every three and one-half days. The only definite arrangement regarding it is that

you follow a regular plan of setting; that is, you could set the top today, if you wanted, and three and one-half days later you could set the next two below, or you could sandwich them. You could arrange them in any manner that you wanted to, but the eggs are placed in this position and left there for 17½ to 18 days.

They have some reference in their instruction books to that point of how the eggs may be set; that is, they may be set in any way at all.

At the bottom of page 8, there is Paragraph 21 that are instructions on how to set the eggs. It reads: "Having planned the hatches to come off twice a week, and having arranged to set four trays in each unit at each setting, the operator may ask himself where to put these trays in the machine. It matters not, as far as results are concerned, but like any other business, a regular system should be established and followed for the purpose of convenience and efficiency. Some operators prefer to put the first setting of two trays in the top of the cabinet, and the next setting of two trays directly underneath, and so on until the machine is filled. Other operators prefer to stagger the trays, putting one tray on the top shelf, and the other tray on the third shelf. At the next setting, a tray is put on the second shelf and another on the fourth shelf. On the next setting a tray would be put on the fifth [fol. 128] shelf and one on the seventh, and so on until the machine is filled. Still other operators do not follow any definite plan, but place the trays wherever there may be empty spaces. It should be remembered, however, that there are four hatching compartments above each cabinet, and only four trays of eggs should be started in one unit at any one time."

That is to say, it does not make any difference in operation of this machine what order or ar-ment of eggs you have. You could get heat transfer from hot to cold eggs, just the same, as in this one. When this cabinet is full of eggs, some of the eggs are endothermic and some exothermic. And there are some of the eggs in this cabinet which are giving off heat and some eggs that are absorbing heat. And it does not make any difference, in accordance with the instruction of that book how those eggs are arranged.

The heat is transferred from the hot eggs, to the cold eggs in the James Way machine by circulating the air with

sufficient rapidity over and about the eggs, the mass of air, units of heat will be picked up from some eggs and heat will be given up to other eggs, and the entire mass of air is then mixed together and made uniform, and heat units are transferred by the mass of air rather than by a particular unit of air successively contacting eggs in different stages. For example, in carrying out this process, it is not possible for a given unit of air to pass or to contact all the eggs in a given column, due to the manner in which they are moving. It is only conceivable that a given unit of [fol. 129] air will contact two or three eggs, while it would be impossible for it to contact successively eggs in different stages of incubation, but the air is itself circulated around and about all the eggs. The mass of air will pick up heat units from some and give up heat units to others, and then, because the mass of air is being circulated around all the eggs, and with sufficient velocity, the uniform temperature will be maintained throughout the entire mass.

Comparing that method of maintaining uniform temperature throughout the mass, with the method of maintaining uniform temperature throughout the mass of eggs in the Smith, it is identical. In Smith and in the James Way, the air functions in the same way. It would be impossible for a given unit of air — successively contact each egg or an egg in each stage of incubation, in a given cycle, and heat is not transferred by a given unit of air picking up heat from one egg and then carrying it to another egg, but it is transferred by the entire mass working and mixing together.

Now, in that James Way incubator, when you get it full of eggs you have eggs which are further advanced in incubation as described on line 65, Page 2, of the Smith Patent. And you also have the cold eggs which are at some other point in that circuit.

Now, the instrumentality that carries out the circulation of air in the James Way incubator—there is a power-driven fan in the top of the cabinet. Referring to the catalogs, on pages 24 and 25 of the catalog, the upper cut is a top view of this incubator with a portion of the top removed and a portion of it cut away. The point that is [fol. 130] numbered 7 here is called the impeller, or the impeller part of the fan, and that is located in the top of the machine, above, at a higher level than either of the egg compartments. That is caused to rotate at a speed of

800 or 850 r.p.m. by a motor which stands on top of the incubator, which is shown in the right-hand lower figure. The motor is on top. It is connected by a shaft with this fan in the top of the incubator. That fan runs, as I have stated, at a rate of 800 or better revolutions per minute. It is a centrifugal or blower-type fan. It is housed in above and below by metal, so that it is a true fan in its action, blowing the air out centrifugally. It is blown to the front, where it enters the ducts 13, at the front and back of the upper diagram, and in those ducts, the air is carried downward to a point at the bottom of the cabinet. It is not quite as easy to see—

I had better get my drawings. I have made drawings of the James Way incubator. Those drawings are to scale. The machine depicted in those drawings is the machine with which I made my tests, and so forth, that I am going to testify to. And that is the machine which is now down in the warehouse here on Ellicott Street, that we want the Court to see. That is also the machine that was here at the time of the proceedings on the preliminary injunction.

Counsel for the plaintiff then offered in evidence a drawing of a vertical cross-section of the James Way incubator and a drawing of a vertical longitudinal section of a James Way incubator which were admitted in evidence subject to examination by counsel for the defendant and marked [fol. 131] Plaintiff's Exhibits Nos. 14 and 15 respectively.

The witness then resumed as follows:

We will first refer to the vertical cross section. (Exhibit 14.) This is a drawing showing a cross section of the James Way incubator unit with the front of the machine to the left; the door is represented at the left. At the top of the machine we have placed the motor directly above the fan. At each side, directly in front of the fan, we have indicated a moisture pan in its regular position, and to the sides of the fan we have two heating pipes, one on each side.

Now, directly above this fan you will note that there is a housing which gives the fan barely operating clearance. There is also a corresponding housing directly below the fan which, again, barely gives it operating clearance. In this housing there is an opening above the eye of the fan so that the air can circulate into the eye of the fan, or, in

other words, the fan can feed. In the lower housing there is also a corresponding opening so that, as this fan rotates, air can feed into the center of it from both sides, and then the paddle wheel arrangement forces the air outward because the housing controls it and makes it go outward by the centrifugal action.

Now, directly below this fan compartment we have the egg compartment.

By the Court:

Q. The fan compartment, how far does that extend on either side? You spoke about the pan, the moisture pan.

A. The moisture pan is inside of the fan compartment.

[fol. 132] Q. How far do the wings of the fan extend?

A. That has a radius of about eight inches, and it is, say three and one-half inches high, and the housing comes close to it on each side.

Mr. Ely: The fan is colored brown, your Honor.

Q. What is that above, that purple line across there?

A. That simply represents——

Q. Above your finger to your right?

A. That is an electric heating element. It is a ring heating element.

Q. How does the width of the fan compare with the width of that heating element that is shown there?

A. The heating element is a ring about eight inches in diameter, perhaps, the ring part. It has an inside diameter of perhaps six and one-half inches. It is just a circular ring that fits in the air stream where the air is passing through it.

By Mr. Ely:

Q. I thought I understood you to say that the fan was eight inches in diameter?

A. Radius.

Q. Oh, a radius of eight inches?

The Court: I do not gather from this how wide the fan itself is.

Mr. Ely: Well, here is the fan, your Honor, or a reproduction of it right here.

The Court: Yes, I know that. It is shown here as about where those arrows come down on either side, apparently. All right.

[fol. 133] The witness then resumed under direct examination by Mr. Ely:

The fan chamber is colored a pink; that is the air space through it. The fan feeds near the eye or the center of it and discharges the air, which it takes in at the center, from the tips of the blades. It discharges it centrifugally, into what I have called the fan chamber or beyond the casing. The lines of that casing are indicated in black above and below the fan. They are labeled "fan housing". That is, there is a narrow channel or box in there in which that fan rotates. And the fan feeds from the center and discharges to the outside of the box. It is a centrifugal fan. And it discharges air over those heating pipes, and then the air goes into the channels that are shown on both the left and right hand side, where the arrows are running down through the ducts to the bottom of the incubator, or to a point near the bottom where it is an opening into the egg compartment. That is a corridor for the passage of the air. And it is divided into two corridors. There is one at the front of the machine and one at the rear of the machine. This passage-way or corridor in the front of the machine is located within the door. That is, the door is a hollow door. And when it closes, that makes the channel communication with the passage for the air from the fan. The other channel or corridor is in the back of the machine. The sides are tight, making it a solid corridor to within approximately three inches of the bottom of the incubator.

[fol. 134] I have measured the speed of the air as it goes down from those passage ways. It is approximately 700 feet per minute. It varies a little at different points, but it is approximately 700. It would be the same average speed at the bottom of the corridor as it is entering at the top of the corridor. That is, it must be, because the corridor is the same area all the way down. It is a straight duct and the same size from top to bottom.

As to what happens to the air after it leaves those corridors down at the bottom, those passage ways down at the bottom, the air is traveling at an approximate rate of 700 feet per minute, and making the turn that it makes there, the natural tendency for it is to carry out towards the

center of the machine or towards the center of the egg chamber. Coming in from both sides, it carries towards the center and upward through the egg chamber.

That is, its velocity makes it swing around and swing out; that is, it would tend to do that, that is the natural condition; and to carry that just a little farther, for the time being. The air then moves upward through the egg chamber to a point where it is drawn back into the eye of the fan again.

In the vertical cross-section, we can see how it can come into the fan below, but we have to look at the other cross-section, longitudinal section, to see how it gets into the fan—

Let us look at the longitudinal section, then, Exhibit 15. In the longitudinal section you will note that there are two egg compartments, side by side, through which the one fan circulates the air, the fan being located directly above the [fol. 135] partition which divides the two compartments. In noting the fan in this position, you will note that there is a channel from the extreme left and extreme right, where the air passes up above the fan housing and goes through a duct to the eye of the fan that is on the left hand egg compartment. The duct is on the extreme left, which carries up and over the top of the fan housing, and in the right hand compartment the duct is on the extreme right, where it carries over the top of the fan housing, over to the fan. Now, you will note that the air is moving upward through the egg compartments, and when it gets near the top of the egg compartments, it must either pass into the eye of the fan from below, or else go to the extreme left or right and pass up over the top of the fan compartment and come into the fan from above. The amount of air feeding into this from above and below is approximately the same.

As to how fast the air is going as it goes into the eye of the fan, it is hard to get a correct estimate of that, but it is somewhere around 900 or 1,000 feet per minute.

As to how fast is it going in the channel leading into the eye of the fan from the top, we have been able to estimate that speed at approximately 1,400 feet per minute.

In the comparison of that speed to that of the Smith, the fastest speed we have on the Smith at any point is about 1,200 feet per minute. I am asked, does this air move in continuous full cycles that I have been talking about with regard to the Smith machine; and if this movement is similar or dissimilar from the movement of air in the Smith

in that respect. It is very similar. As a matter of fact, it [fol. 136] is the same general principle. The air is forced outward. In this longitudinal section we do not have the ducts which carry it to the bottom, but is forced outward by the fan, centrifugally forced down from the ducts to the bottom of the incubator, when it enters the egg chambers and passes up through the egg chambers and is drawn up through the fan again.

Perhaps I can show that recycling of air better in Exhibit 14, the vertical cross section. Starting with the fan at a starting point at the top of the incubator, the air is thrown out centrifugally, traveling to both the left and right, or it would be to the front and rear of the incubator, thence down through the ducts of the corridors to the bottom of the incubator, where it enters the egg chamber and is drawn up through the egg chamber and back into the fan again.

Now, just before we go any further on that, I wish to just compare that air circulation, that recycling air circulation, with the air circulation in the Buckeye, shown in Plaintiff's Exhibit 12. In the Buckeye we have two egg chambers and one corridor. In the James Way we have one egg chamber and two corridors. If you were to divide the James Way machine through the center and move it over so as to place the two corridors together, then you would have the one corridor and two egg chambers. It is simply a matter of arrangement, as far as any difference is concerned.

That is, in both cases, the air, as it leaves the fan, passes down through the corridor into the egg chamber and then back through the egg chamber, back through the fan and is [fol. 137] recycled.

As to how that air is moved, in the James Way machine, through the egg chamber and what sort of air movement you find there and how I found it—in the egg chamber, the air movement is upward at practically every point. The lower part of the egg chamber the air movement is upward at practically every point. The lower part of the egg chamber the air naturally has an eddy; that is, if you have an air current shooting in through the channel here, and another one there, at a speed of 700 feet per minute, those two channels or those two currents would have a tendency to come over and meet in the center and pass on up, but there would be a rolling motion on each side or an eddy. Now,

that is the natural condition that you would expect. The air then moves on up and is drawn in at the top.

Now, at the bottom of the James Way, there is a device which is labeled here as an air mixer. In their catalogs, they sometimes call it air mixer, and sometimes call it turbulator. Directly below that there are four openings, only two of them shown here, and they are for the admission of fresh air. They are one-inch openings. If the turbulator or air mixer was not there, these incoming currents of air from the sides would not thoroughly mix this fresh air coming in, or cooler air, until it had carried up into the machine for maybe two or three trays, or perhaps six or eight inches high. This turbulator or air mixer is placed here at the bottom and runs at a speed of a little better than 200 revolutions per minute. Its action is a slight fan action. To make it an efficient fan, the only thing you would have to do is change the shape of the blades; but that is [fol. 138] sufficient to mix this cooler air with the air streams that come down from the two sides, and prevent the air or the cool spots being created here in the bottom of the chamber because of the fresh air entering at that point.

As to how the function of that so-called air mixer or turbulator compares with the function of the fan in the Smith, as a means for mixing the cool air with the current of fresh air—it has the same purpose as in all the forced draft machines. It is not only the custom, but it is almost a necessity that fresh air be taken in behind a fan of some description, so that it will be thoroughly mixed with the other air before it comes in contact with the eggs; otherwise you would have a cool spot at some point.

Asked how the air continues in its movement up through the egg trays, the witness said: It moves up through the egg trays as a very definite current or stream. Right at the bottom, it is not as uniform as it is farther up, because the air is shooting in from the two ducts at the front and rear. It has a tendency to swing to the center, and there is a tendency for a downward draft along the sides.

Now, this air mixer also has a tendency to break up that central current, where they come to the center; it has a tendency to break that up so it is not so pronounced, and the air is leveled out more uniformly in the bottom trays than it would be if it was not there, and then the air moves

upward between the trays to the top in a very uniform manner.

That movement is a very definite current. It is steady, moving in one direction all the time, moving at a uniform speed all the time. The average speed of the current move-
[fol. 139] ment of air going through there is about 135 feet per minute on the average. You will find it going 150 in some places, and 160 in others, and at 90 in others.

It is considerably faster than the current of air in the egg chambers of the Smith. The average movement in the Smith is perhaps 75 feet per minute. The average movement here is about 135 feet per minute.

You find in the Smith places where the air will move at faster speeds than others. And you will find that same condition here in the James Way.

As to which is the predominant instrumentality on the air; which is the thing which controls the movement of the air; the fan up above, or the fan below—or instead of the "fan below", let us call it the air mixer; which is the predominant force on the air—the fan above is quite forceful. It moves the air with considerable velocity, while the one at the bottom, due to its shape and construction, is not very efficient as a fan. It operates at 200 r. p. m. or thereabouts, and it is sufficient for the purpose of mixing the fresh air with the other air, but its effect is not felt above the bottom three trays.

Now, that fan down below, or that air mixer down below, is moving at only from 200 to 220 revolutions per minute, depending upon the current. And the fan up above is moving at from 800 to 850 revolutions per minute, depending upon the current. And the fan up above is enclosed in a housing which not only makes it efficient but the housing definitely directs the flow of the air.

I keep calling that thing up there a fan; I say this thing [fol. 140] at the top is a fan. Now, I am at variance with the defendant on the title for that thing. I remember Mr. Toulmin said, "Do not mislead the Court; there is no fan on there." Mr. Toulmin, Sr., said that. Then, Mr. Toulmin, Sr., said, "No, it is not a fan in operation."

Now, my authority for calling that a "fan" is—

Well, in the first place, its construction is the same as many of the commercial fans that are on the market. There are several illustrations in the text books and catalogs showing a fan of the same description; and furthermore, the

James Way catalogs, books of instructions, and so forth, call it a fan.

There are numerous cases in the James Way catalog where they call it a "fan", but if we will turn to the latest book of operating instructions, which is the last one, just in front of the catalog—it is right in the center of the book. Now, on the first page, which is a sort of general information, under D, it refers to the "fan", shaft and bearings. That is, referring to the same instrumentality that I have been talking about.

If I may, I will just check this book of instructions through first. Again on page 3, under 13, Par. 13, "Inspect fans occasionally and keep bolts in fan drawn up tightly with a lock washer in each end."

Again on page 12, Par. 32, where it tells you what to do if the power fails; in the last line, it says, "no fans" meaning no fans operating, as the incubator has been dead, no heat, or no fans working.

In 33, in the first line, immediately below, it refers to the "fan" shaft; and again on 13 in Par. 40, it tells what to do with noisy fan shafts.

[fol. 141] Now, earlier in the book, they have supplied us with a number of books of instructions, and there is one point in there, there is a blueprint. Now, the page opposite that blueprint is entitled, "Instructions for replacing the fan in the James Way incubator hatcher." At several points through those instructions it tells you how to take off the old fan, how to put on the new fan; and then, if you will just turn over to the next page, there is a cross-section, Fig. 14, and about the center of the page it shows a drawing of the device, and it is labeled, "891-A, fan".

I seem to be in agreement with the defendant that that is a fan. And whether it is a fan or not, it is a device for impelling the air, or forcing the air. And the fan on the Smith incubator is a device for forcing the air, so the function of the two is the same. One is a centrifugal fan and the other is a propeller fan. Just two different types of fans, that is the idea.

I might state that there are numerous pages scattered all through here where they have referred to this as a fan. In fact, that word "fan" is sprinkled all through those instruction books.

Now, I noticed in Dr. Green's affidavit filed here on the motion for preliminary injunction, it says, "This feeder is

rotated at low speed and it is not designed to create currents of air, nor is it capable of doing so." I think the doctor is greatly in error. It is one of the simplest forms of fans. In fact, it is one of the most primitive forms of fans. I said the air moves in current form through the eggs in James; that is correct. As this air moves in current form it passes by eggs in various stages. And it operates as a [fol. 142] means to pick up the heat from the eggs in the further advanced stage of incubation and transfer that heat to the eggs in the less advanced state of incubation. The air will pick up the heat from any eggs that are warmer than the air and will transfer or deliver up the heat to any eggs that are cooler than the air. I find reference to that fact in the books of instructions and catalogs of the James Way Manufacturing Company, Exhibit 10. There are numerous cases of that. In the first place, they have definitely stated that you should not fill the cabinet with eggs, all of one stage, their reason being that, after you pass the tenth or eleventh day, the heat will be so great that you cannot control it. I would like to refer to that.

The title is, "To all users of James Way incubator hatchers." There are several of those, and this one bears the numerals at the bottom of the page, 022630-1.

On page three of that book, you will note that the first full paragraph starts out, "Operating cabinets with only a few trays or eggs in it", and the last sentence in that paragraph is, "Do not leave the cabinet full of eggs of the same age as, after the tenth or twelfth day, enough animal heat will be created so that you cannot keep this cabinet down in temperature."

So if you follow those instructions, you will put eggs in, some that are younger than ten days and some that are over ten days. And you will avoid, then, the excessive heating at the end. You will avoid that if you have the incubator partially filled with eggs that are absorbing heat. And the other part with eggs that are giving off heat. They tend to [fol. 143] equalize each other and that makes it possible to operate. That is, the fresh eggs, the eggs that have just been put in, will cool off the air, which will otherwise be excessively heated by the eggs which are further along in incubation.

There is something about saving fuel by this scheme, in the description of the James Way incubator. By utilising the heat of the hot eggs, they save fuel. The catalogs so in-

dicate. In the first regular catalog—that would be Incubator Book No. 68, turning to page 23, the top of the page is entitled: "New Economy of Operation, or less labor, less fuel, lower cost per thousands eggs, fewer calls, all makes for greater economy", and taking the last two words of the first column, starting there, "The incubator hatcher saves approximately one-third the fuel usually consumed for equal capacity."

It says it saves one-third; that would mean it takes one-third less. It takes one-third less fuel when you are setting the eggs in staged incubation with this device. Nothing gives off heat except those old eggs that are in the further stages of incubation. In addition to the standard equipment, that is to say, they save fuel by using the heat of the older eggs.

Now, about the movement of the air operating as a means to keep that temperature even throughout the incubator, they have reference to that in the James Way catalog. I think Catalog 42, page 15, is the one I have in my note, the same book that we just read from, page 15. You were at page 23 before.

I had it marked 42 in my book, page 15. It is headed at [fol. 144] the top, "Tempered Ventilation", and this pages takes considerable pains to explain how the air moves through the machine and starting with the bottom two lines of the first column, it says, "The air rises uniformly between all the eggs in the entire incubation compartment, without the effect of a direct blast, but with a gentle upward movement. The rising air is drawn through the two openings at either side at the top, and again mixed in the impeller compartment and starts another complete circuit of the cabinet. The rate of air flow is rapid enough to prevent differences in temperature at different points."

I call your attention to the first part, which says, "The air rises uniformly between all the eggs in the entire incubation compartment." That is, it is not beating around and stirring around, and all that stuff that we have heard about.

As a matter of fact, it is moving faster, the current form is moving faster than in Smith. Is is more easy to find it as a current.

In the words of the Smith Patent, admittedly air is moving with sufficient velocity from the James Way circulating device to maintain the air throughout the chamber at sub-

stantially the same temperature. The last sentence in the paragraph that I just read states, "The rate of air flow is rapid enough to prevent differences in temperature at different points."

Reading from Page 2, line 73 of the Smith Patent: "It is obvious that the fans can be so arranged and can be operated at such speed as to cause the hot air to circulate fast enough to keep the temperature throughout the chamber between the limits of 100 and 105."

[fol. 145] As a matter of fact, the temperature that this James Way incubator operates at is about 100 and one-half. That is found in their instruction books, to operate the incubator at a temperature of 100 and one-half. The James Way incubator has a construction in which the fans are arranged and operated at such speed as to cause the hot air to circulate fast enough to keep the temperature throughout the chamber between the limits of 100 and 105, as explained in the Smith Patent.

And that temperature is maintained by picking up heat units from the hot eggs and carrying them to the cool eggs, and the cooling effect of the cool eggs on the temperature of the air.

Now, with regard to this conservation of moisture, the moisture is conserved in the James Way machine. The moisture is conserved in the Smith machine.

By restricting the amount of fresh air that enters the machine, you prevent the moisture laden air from escaping, only in limited quantities, and the more you restrict the amount of fresh air that comes in, the less moisture escapes and you are able to control your moisture and raise it to proper temperature, or the temperature for incubation.

Now, pointing out in my drawing, Exhibit 14, the restricted openings by which a limited amount of fresh air is taken into the incubator, and the restricted openings whereby a limited amount of foul air is exhausted—the fresh air is taken in at the bottom of the egg chamber directly underneath the air mixer. At that point there are four one-inch openings. Now, the exhaust air is exhausted [fol. 146] at the top of the incubator on the left-hand side. Three arrows there indicate air is coming out and spreading. At this point there are two one-inch openings, or approximately that, for each egg compartment, and they are controlled; there is a damper or slide by which the open-

ings can be covered, and if they are covered completely, unless there is some leakage at some other point, there is no air enters the cabinet. If they are open, there will be as much air entering at the bottom of the cabinet as there is exhausted at this point, barring possible leakage at other points.

The Court: What is the purpose of having the damper on there?

The Witness: At certain seasons of the year, your outside atmosphere contains more moisture than at other times. If you are taking in moist air, you can easily take in much more of it and still maintain your moisture. If you are taking in very dry air, it is natural to shut your dampers off a certain amount. Furthermore, if you have the cabinet only partially filled with eggs, it is desirable to keep the dampers partially closed, and it is reasonable to understand that the more fresh air that you take in, the more money you have to spend for heat; and particularly, with the electric equipment, it is desirable to restrict the amount of fresh air or hold it down to a minimum, and at the same time hold your moisture at the right place. The two, moisture and ventilation, are very closely related in all machines of this type.

The Court: Is there corresponding apparatus in the Smith machine?

[fol. 147] The Witness: Yes, sir. The restricting of the fresh air inlets pulls down the amount of air that can be taken into the machine continuously. That is, here they control the exhaust; we control the inlet.

Q. Is there any difference in the practical results, whether you control the exhaust or whether you control the inlet, Mr. Taggart?

A. It is a matter of convenience only.

The Court: How do you control the intake?

The Witness: By the damper.

Q. Will you show his Honor that again, in the Smith Patent, where that is and the description of it?

A. In Fig. 1, directly above the fan, there is Fig. 24; there are two boards or slides there that are partially closing that opening. Now, they are adjustable. It refers to it in the patent as a valve opening.

The witness resumed under direct examination by Mr. Ely as follows:

The amount of air interchanged in either the Jamesway or Smith is going to depend upon the position of the slides, or the control of the exhaust and intake. If the exhausts are wide open, you will have a change of air, or you will let out a volume equal to the volume of your cubical contents in approximately four minutes; and in the Smith machine, if you have the valves wide open, it will be approximately three to four minutes. In both cases, however, there is a range there of practically the same range of air interchange.

It is purely a matter of construction or matter of handling.

[fol. 148] I am asked if the James Way incubator is a fresh air machine in contrast to the Smith? I do not see how it could be so classified. You can take in as much fresh air in one machine as you can in the other. It is simply a question of the size of the intakes. I find in the James Way literature several references to the relation of the air exhaust, and air interchange and conservation of moisture, reference there to the fact that they conserve the moisture in the James Way machine. There are several references to it.

In the operating instruction book, which is the last one before the catalogs, on page 10—as a matter of fact, you can start on page 9 with Paragraph 22, where it says, "Cabinet ventilation", it tells you how to adjust your exhaust openings so as to maintain proper conditions. It tells you how to have them different in different rooms and in different seasons of the year; and the very bottom two lines of Paragraph 22 is headed with the word "warning" in capital letters. It reads, "The ventilation should also be controlled to quite some extent by the humidity of the cabinet as described in the next paragraph."

Paragraph 23 is headed, "Humidity or wet bulb reading." Now, that paragraph is divided up into four paragraphs. The last one—there are four or five—the last one is headed "humidity and ventilation are closely associated. Humidity can be increased in the cabinet, not only by opening the moisture pan cover, but also by partly closing the ventilation slide. If unable to bring humidity up to the correct wet bulb temperature by opening the moisture pan

cover, you may partially close the ventilation slides but do [fol. 149] not close them entirely, even though you have but a few trays in the cabinet."

I will not take the time to read the adjoining paragraphs, but they bear on the same subject. There have been moisture pans in incubators as far back as I know anything about them. And the Smith patent has means for adding moisture to the air. In addition to that, it has means for conserving moisture because it moves in this closed cycle. And as part of that, restriction of the vents conserves moisture, as well. It holds down the evaporation. And in the James Way, the moisture is conserved, in the same way as the Smith.

At this point Court was adjourned to 81 Ellicott Street, where the witness, Mr. Taggart, demonstrated the Smith, Buckeye and James machines in the presence of the Court and Counsel.

Proceedings were then adjourned to January 31, 1934, 10:00 A. M.

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Proceedings January 31, 1934, 10 A. M.

Appearances: Same as before noted.

The hearing was resumed on January 31, 1934, at 10 A. M., with the same appearances as before.

The witness Joseph Inskip Taggart, being recalled as a witness on behalf of Plaintiff, testified as follows:

Direct examination resumed.

By Mr. Ely:

Yesterday afternoon, after recess, we went over to the [fol. 150] warehouse at 81 Ellicott Street and saw a number of demonstrations which I conducted for the benefit of the Court.

We first inspected a Smith 52,000 egg machine. In this machine we first explained the operations of it in a general way. We then demonstrated with smoke tests to show the general direction and air movement, and character of the air movement. We illustrated with anemometers that the air was moving, and showed the Court how we placed the anemometers in different positions to take readings. The

air in the Smith machine was moving downward through the corridor and decidedly turbulent. There were numerous eddies in the corridor, and it passed outward and near the floor of the corridor into the incubation chambers, thence upward to the egg chambers and back to the fan. We pointed out that there was a small amount of air exhausting from certain ports and, of course, a corresponding amount being taken in.

I demonstrated the recyclying of the air, we showed by smoke how the air, being carried up to the top of the egg compartments, was drawn back over the beams into the fan compartment. The incubator was empty, so far as eggs. There was only one tray that was filled with china eggs to illustrate how the eggs were placed therein. Otherwise, it was in an operating condition. The temperature was not quite up to operating temperature.

Comparing these tests, generally, with the results which are depicted on these drawings of the Smith incubator that were introduced yesterday.

(Exhibits 11-a, 11-b and 11-c.)

[fol. 151] The direction and character of the air movement was shown to correspond to what is illustrated in the drawings. The speeds were not demonstrated to be the same. We did not take any particular readings there due to the number of people that were in the corridor. Air currents were greatly disturbed, and furthermore, the speeds, velocities and so forth, shown on these drawings were taken with a machine in regular operation position, filled with eggs.

Now, after the demonstrations with the Smith machine, we next inspected a Buckeye incubator No. 48, which is manufactured and sold by the Buckeye Incubator Company under the license under which they pay a royalty to Dr. Smith. It is operated on the same method or process as the Smith incubator. There are two egg chambers with a central corridor, separated from each other by wooden partitions, with passageways above and below, into the egg chambers, and there is a fan there that would cause the air to circulate in the corridor, and thence into the egg compartments, up from the egg compartments and back into the fan compartment again. That particular model of Buckeye machine had the hatching trays below.

We then inspected a Buckeye incubator No. 310, which is manufactured and sold by the Buckeye Incubator Company, under the patent, and on which they pay royalties to Dr. Smith. That incubator differed from the first Buckeye machine in that there were no trays in there for the eggs actually hatching or the chicks actually coming out of the shell. It was constructed to hold the eggs for the first 18 or 19 days.

We then inspected an incubator that was purchased from [fol. 152] the James Manufacturing Company and is known as the James Way. This incubator was simply the incubating unit. The hatching sections or the hatching compartments had been removed from above for the purpose of illustrating, for the purpose of putting in a glass top on it so that you could see what was taking place inside the air circulating chamber or the fan chamber, and other glass partitions had been substituted for wood partitions so that you could see what was going on inside one of the compartments. After inspecting the equipment and explaining its use and operation, we introduced smoke into the machine at different places, showed that the air moved upward in the egg compartments and into the fan through both the lower and upper opening, from which it was forced outward by the fan and down through the passageways at the front and rear of the incubator to the bottom, where it entered the egg chamber again.

After demonstrations with the smoke, we then introduced anemometers at different places and showed that they ran with certain speeds, showing a definite upward movement of air at all points except in the second tray from the bottom. At that point we showed that there was either a cross-current or no current, but we did not carry our illustrations far enough to show which it was at that point. In the James Way incubator, the air was moving in a definite current propelled by a fan at the top of the machine, downward through the corridors and upward through the egg compartments, and was recirculated over and over again. The character of movement of air, specifically, in the egg [fol. 153] compartment was a definite upward current at all points above the second or third tray from the bottom. In those trays there were definite movements that followed the same general direction all the time. Those were in the nature eddy currents. We found eddy currents in the

Smith machine. In the Smith machine there were numerous eddy currents in the corridor; also eddy currents directly behind the curtains; and technically, there were eddy currents scattered at different points throughout the machine; whereever the current of air would contact an obstruction, that would cause it to turn. Any fluid that moves faster than what is known as the critical velocity is turbulent, and the critical velocity depends upon the viscosity of the fluid and upon the channel through which it is moving, and on its speed. Those things all have to be taken into consideration; but in a machine like an incubator, where we have the egg trays and other objects for it to come in contact with, the air current is bound to be turbulent in all parts of the machine, wherever there is any appreciable velocity. In these smoke tests, to generate the smoke, we placed dry ice in water of a temperature of approximately 100 degrees, and the carbon dioxide gas that was given off was conducted by means of a tube to the point where we wanted to release it. The reason for using that type of smoke was that, after it had served the purpose of illustrating the direction, it evaporated into the air and disappeared, and there was no odor to it, and it did not smoke up the interior. With many kinds of smoke, they do not disappear, and it soon becomes so foggy that you can no longer see what you are doing. Now, there was some [fol. 154] other demonstrating apparatus that I had over there. One of the devices, I took a regular fan as used by the Jamesway Company, and mounted it— It was a duplicate of a regular fan; and mounted it between an upper and lower housing that corresponded to the upper and lower housing in the Jamesway machine; made the feed openings into the fan the same size that they are in the Jamesway, and operated it with the same motor that we use on the Jamesway, to demonstrate that a fan of that kind did have a considerable force. That is, it would throw air, in no uncertain terms.

This was mounted in a duct, and the intake of this duct was throttled so as to create a static pressure in there that was approximately equivalent to that which was—that is, the fan would be working under approximately the same conditions that it was in the Jamesway machine. The purpose of it was not to be accurate to the last detail, but simply to demonstrate that the fan did have considerable

force. The other apparatus was what I called, I believe, a tunnel, or wind tunnel, which had celluloid sides. In one end of it I had mounted an ordinary house fan and had placed such resistance in the line that the fan was turning very slowly. The air feeding into the fan— I should state that the fan was set so that it blew the air out so that the current feeding the fan would be an induced current. That is, the current through the tunnel. The current passing through the tunnel was an induced current, and it was operating at a speed of approximately two hundred feet per minute. In this tunnel I placed two anemometers to illu- [fol. 155] strate that you can tell direction of air flow by the use of an anemometer. There are different ways of doing this, but the simplest way is to move the anemometer so that it completely stops. If it stops, we know that you are at right angles—the face of the anemometer is at right angles to the flow of the stream. In that way, we can tell direction; then, by placing the anemometer directly across the stream, we would have a reading showing the air velocity. This, of course, is subject to correction of calibration of the anemometer, and other correction of that nature. The purpose of it was not to be extremely accurate, but to show how we established our readings.

(Counsel for the Plaintiff then offered in evidence the Smith machine which was demonstrated at the hearing the day before; the Buckeye No. 48 machine which was also in the warehouse; the Buckeye machine No. 310; the James Way machine which was demonstrated and the Jamesway fan demonstration unit and the wind tunnel demonstration unit, all referred to by the witness and the same were admitted in evidence and marked Plaintiff's Exhibits Nos. 16, 17, 18, 19, 20 and 21, respectively.)

The witness then resumed under direct examination by Mr. Ely:

I said I made some changes in the Jamesway machine [fol. 156] from the condition in which I purchased it, and that was to put in some glass doors, front and rear, and a glass top. I also cut away portions from three or four of the trays. That was done at the last, after my tests were made. It was done to give a clearer view of the conditions inside the trays. Those changes did not make any difference in the operation of the machine. I checked it before

and afterwards, and any difference that might be made would simply be very minute, and relative only. The general principle is identical. I have some photographs, which show the Jamesway unit, in which the incubating unit is changed the way I showed it over there on the exhibit.

There are three photographs. One of them shows the front view of the Jamesway machine. That shows the complete unit with the hatching equipment on the top of it. And it is the equipment as we purchased it from the Jamesway people, with the exception that glass has been substituted in one of the doors. The second photograph shows a closer-up view of the door. That has the glass removed from it, or has the glass substituted for wood partitions; and the third photographs shows a rear view of the same. That is a rear view of the compartment, showing how glass is substituted for the wood partitions.

(Counsel for plaintiff then offered in evidence the photographs mentioned by the witness showing Jamesway machine with glass substituted in one of the doors, showing closer-up view of door with glass substituted for wood par- [fol. 157] titions, showing rear view of compartment, showing how glass is substituted for wood partitions which said photographs were admitted in evidence and marked Plaintiff's Exhibits 22-A; 22-B and 22-C, respectively.)

The witness then resumed under direct examination by Mr. Ely, as follows:

Preparatory to this trial I made some extensive measurements of air currents, and so forth, in the Jamesway machine. The purpose of my making these calculations or tests were to study the conditions of air movement in the machine so as to know just what was taking place there. I can tell you the air speed or approximate air speed from various points and directions. These demonstrations of mine were not intended to be accurate to the last foot because,—Well, in the first place, with different currents, different types of currents, and even individual motors, there are no two machines that will be exactly alike; and furthermore, there was no reason for being accurate to the last foot. They demonstrate what takes place there, and also that there is a very substantial current. If corrections were made for the readings for friction on the anemometer and other corrections of that kind, the cur-

rents would be stronger, for the most part, than are shown on my drawings. If there is any error as far as velocity is concerned, the error is on the minus side rather than on the plus side. Now, in determining these current velocities, and so forth, in the Jamesway machine, I used anemometers. I made hundreds of tests with my anemometers. [fol. 158] I have a photograph here that shows the way the anemometers were placed. That is simply an illustration. Your Honor understands that in the machine, in operation. the trays are always tilted to one side or the other. The operating instructions furnished by the James Company are very specific on that point, that the trays must be turned; otherwise the air will not circulate as it should; and you will also remember that I called your attention to the fact that when the trays were turned, there were definite air channels established from the bottom to the top of the egg compartment.

The anemometers were placed in the egg compartment, in the trays as shown in this photograph so that as much of the anemometer would be over the air column as it was possible for us to have, the anemometer being considerably narrower than the width of the air column; it was as much over the air column as we could get it.

The Court: Are not these in the trays here?

The Witness: Yes, sir, they are in the trays in the same manner in which——

The Court: Then they would not be over the channel or column?

The Witness: A portion of it would be, yes, sir.

Mr. Ely: About half of it projects over.

The Court: Oh, yes, I see.

The witness resumed under direct examination by Mr. Ely:

This arrangement was similar to the arrangement I made with the anemometers yesterday in those few tests I made [fol. 159] with the anemometers in the Jamesway machine, and the Jamesway machine was filled with china eggs at the time I made the demonstrations yesterday. I have reduced to a chart, or series of charts my findings in the Jamesway machine in normal operation.

(Counsel for the plaintiff then offered in evidence the photograph mentioned by the witness showing how anemo-

meters were placed in tests made by the witness, and the same was admitted and marked Plaintiff's Exhibit No. 23.)

The witness then resumed under direct examination by Mr. Ely, as follows:

Now, in this first series of charts that are bound together, ten sheets in all, the first sheet is a scale diagram of an egg tray of the James machine with the door at the left-hand side and the rear of the machine at the right-hand side. We are looking down from the top; the baskets or individual egg trays in which the eggs are tilted, are shown there, but for the sake of avoiding confusion, we have not shown any eggs in these trays. The tests were made with eggs in the trays. The trays were filled yesterday. The circles on the tray represent the position in which the anemometers were placed. The machine was full of eggs. Of course, 28 anemometers were not put in there at one time. Anemometers were placed in these different positions and readings taken and then the anemometers were moved. This top sheet represents the top tray in the ma- [fol. 160] chine. The anemometers were placed in there in horizontal position, in all of these readings that are shown here, and the numbers in the center of the circle represent the readings of the anemometers in those tests. You will note that the readings on the top page vary from 45, I believe is the lowest, up to 505 feet per minute.

Now, in taking these readings, the anemometer was placed in the tray. In the first place, the anemometers were set at zero. They were placed in the tray, the tray put in the machine, and the motor started, allowed to run two minutes, and then shut off. The tray was then removed from the machine and the anemometers read to show how much air had traveled through them in the past two minutes. That was then divided by two to get the reading per minute.

That was the method followed in making all of these readings, and each readings here has been checked at least three times to see that it was a true indication, and if there was any air at any time, or anything that would cause me to question it, I would check it oftener than three times. The air moving through this top tray was moving upwards at all these points. This is the upward reading. Of course, in the center of the tray, the air is curving over

to your outlets, and the real air movement might be even faster than is shown here. That is, the two outlets for the currents are at one side or the other of the chamber. These anemometers were within at least four inches of the top of the egg compartment. And the current turns and goes to those outlets. I have got 505 feet per minute there and 350 on the eggs. With relation to these outlets, [fol. 161] that is very close to the outlet, that goes into the bottom of the fan. That is, the current is sweeping into those outlets at that point. That is the reason why the current is higher at that point, that is comparable to the speed of the air in the Smith egg chamber where it is going over the beams into the fans. In other words, with relation to that point, it is the same as the point where the air is going over the beams in the Smith. And the air going over the beams in the Smith is going about 500 feet per minute. That is to say, taking equivalent points on the Smith machine and James machine, I find the air speed approximately the same. And down here at the lower edge of the sheet, where I have 220 and 140, that is near the outlet on the opposite side. The outlet there is not throttled to the same extent that it is immediately underneath the fan, and we do not have as high speeds at that point as we do at the corresponding point on the other side of the tray. This demonstrates that the air is moving in current form through this. As there was no downward movement at any point through here. It was all upward movement. The speed is lower in the center. That is because that point is removed. It is further removed from the outlets. Now, take the next tray down. That records the readings of the anemometers in these positions on the second tray from the top. The speed in the upper edge has decreased somewhat beyond what we had on the top tray, that is towards that center fan outlet. The reason for that is, you are getting further away from the throat of the outlet and your readings change. The aver- [fol. 162] age over the entire tray is 135 feet. The average on the top tray, which records here, is 142½ on the eighth tray from the bottom, that would be the third one down, that had an average of 135. Differences in speed at different points are ironed out as you get further away from the top. As you get further away from the outlets, it becomes more uniform through the entire tray.

By the Court:

Q. What was the fan speed of the machine?

A. Of this machine?

Q. This machine?

A. The speed of the propeller, that is, that we had in the Smith?

Q. Yes.

A. They were running yesterday—the one we tested was 1,630 R. P. M.

Q. This shows 836?

A. This is the speed of the fan in the top of the Jamesway machine. It is a different style fan.

Q. Well, I was wondering about the effect of the speed of the fan on the speed of the air in the chambers in the machine?

A. The fan speed in itself means nothing. It is the volume of air that it delivers. You can have fans running at a high rate of speed that do not deliver near as much air as slower moving fans of different type, different construction.

Q. Well, the amount of air delivered depended on the size, or depended upon the volume of air in the instrument and, of course, the size of the corridors through which it goes?

A. No. A fan is rated at a certain velocity or a certain volume. The type fans which we had in the Smith yesterday are rated at 1,500 cubic feet per minute. Now, there are other fans built which have a different pitch [fol. 163] blades but are the same size, which will throw fifty per cent. more air than that. There are other fans of the same size and the same general type, but with a different type of current. For example, here in the city you have a lot of twenty-five-cycle current. You have that same construction or the same blades, and put on twenty-five cycle current, and you do not get over 1,200 cubic feet of air delivered, or from the same fan. The type fan that is used in the Jamesway machine here is delivering from five to seven hundred cubic feet per minute. It is difficult to get an exact estimate on it. I am giving plenty of leeway, but the volume of the machine, the air volume in there and the amount of cubic feet delivery is going to determine the air speed through the points that it is traveling, and the air speed up through the egg chamber of the

James machine average 135 feet per minute or more, and these readings here confirm that; that is, the readings are taken over the entire area and the average is made.

The witness resumed under direct examination by Mr. Ely as follows:

Pursuing that point that his Honor brings up, as to the volume of air thrown by a certain fan in Smith, that fan, running free and as sold by the manufacturer, is rated at 1,500 cubic feet per minute. And the four of them would be running six thousand feet, running free. Of course, when you put in resistance in there, you cut down on the volume, but 6,000 feet per minute would be a maximum for those four fans. The cubical content of a Smith incubator that has these fans in it that I am talking about, if [fol. 164] you make allowance for your eggs and egg trays, it is approximately 750 cubic feet. That is, you have four fans throwing 6,000 cubic feet of air a minute, and that is operating in a housing of 750 cubic feet, approximately. The approximate volume of air that is thrown by the fan in the Jamesway is in excess of 500 cubic feet per minute, and the cubical content of the Jamesway incubator, both sizes, served by the fan, the entire cubical content served by that fan, making allowance for the eggs and the equipment in there, it is slightly less than thirty cubic feet of air space. Now, making the ratio—taking the ratios of cubical content in the Smith and the volume of air thrown in the Smith and the cubical content of the Jamesway, and the volume of air thrown by the fan in the Jamesway, in the Smith machine, if the fans are throwing six thousand cubic feet of air, and 750 cubic feet of air space, the fans will be working over that air—all the air will be passing through the fans in approximately nine seconds. Now, in the Jamesway machine, where you have 500 cubic feet of air delivery, or greater, and the cubic contents of the machine is approximately thirty cubic feet—the air will be worked over approximately fifteen times, fifteen or sixteen times a minute, which would mean about every four seconds, which would mean that the air is worked over practically twice as fast in the Jamesway machine as it is in the Smith machine. And the faster your air moves, the more pronounced currents you will get. That is, I find, as a matter of fact, these identifiable currents of air with

greater ease in the Jamesway machine than I do in the Smith.

As to this change in the speed having any bearing upon [fol. 165] the results as far as incubation is concerned—any bearing it would have, it would have a tendency to iron out any irregularities of temperature to a greater degree.

The Court: You mean, the more rapid the speed——

The Witness: The more rapid the speed, the more uniform the temperature will be throughout the——

The Court: What I am getting at here, on the question of infringement, is the question—you do not claim a question of similarity of action or movements or currents, but the question is the effect of different rapidity of movement; but you have answered that, I think—not what speed has to do with the question of infringement, but the difference in movement.

Q. Is it a difference in kind or difference in degree?

A. It is difference in degree.

The witness resumed under direct examination by Mr. Ely.

Whenever you have a mass of eggs in there heating, you must move the air through them to keep them sufficiently cooled down, or the temperature sufficiently uniform. If you increase the velocity, you present no new problems. You simply do the job a little bit better, if there is any difference.

By the Court:

Q. Well, your point is that, in the Jamesway machine, as well as in the Smith machine, the speed is retained at a sufficient velocity to maintain an evenness of temperature throughout the tray of eggs?

A. Yes.

[fol. 166] Q. You claim that the fact the velocity is higher does not affect the question of the proper temperature to retain the eggs at, or at which the eggs should be retained?

A. It does not affect it, no, sir.

Mr. Ely: That is to say, your Honor, our point on this is that exact speeds of air do not make any difference, the exactness of the speed. In other words, the Smith patent is not limited to a speed of air of certain velocity, a certain

velocity of air. You can get the same results and increase your velocity if you want to, but there is no point in whether the air is moving at 75 feet a minute, or 150 feet a minute, or, as in here, at 135 feet a minute.

I call your attention to the fact that the average on the first sheet was 142.5; on the second, 135.2; on the third, or the eighth tray from the bottom, it is 135.2; on the seventh tray from the bottom, 140; on the sixth tray from the bottom 136.4; on the fifth tray, 131.5; on the fourth, 132.1; on the third, 131; on the second, 134.1; and on the bottom tray, 139.4.

I would like to call your attention to the bottom tray, first; that is No. 1. You will note that there is a considerable variation there near the center. We have one that reads zero; we have another that reads minus thirty. In the lower left-hand corner, we have one that reads minus 205, and one immediately above it, minus ninety. This tray is in the area immediately above the air mixer, and the action of the air mixer is experienced in this tray, in that it causes eddies downward on trays at certain places, and a stronger upward draft on others. Also, its effect is shown in the second [fol. 167] tray, which is immediately above; and you will note there, there are several zeros, a few minuses; and also, in the third tray, the effect is still felt in that. The upward movement is very slight at some points. That is to say, you have, at those points, eddy currents. As to the proportion of the whole volume and those currents it is very small per-cent. of it. And no greater percentage, say, than you find in the Smith egg chambers. In this lowermost tray I have the speed of air coming in, say, in the lower right-hand corner, 420,295, and 410. Those points are located with respect to where the air is coming in—they are near the point of entrance, but it is also on the delivery side of the impeller—or not impeller, but the air mixer; so that the air mixer at the bottom has a tendency to pile up the air moving, that is, upward moving current at that particular point. It is a very definite current. It moves substantially the same today and tomorrow and all the time, at that given point. I have a minus up in the corner, 75. There is a downward draft at that point. The air is coming in from the outward channel at a rapid rate, at that point, and it has a tendency to carry it out there. The mixer is moving in the opposite

way, so that it has a tendency to pull down at that particular point, and the current carries out further and it whirls back. You will note in this Exhibit 14, the air comes out here with a considerable force, and if this air mixer is turning, as it is, it has a tendency to pull away at certain points and to pull up at others as it meets these other two currents, the currents coming down from the sides, and so there is an eddy at that point, and there are definite places where there are eddies in here. You find an equivalent eddy in the Smith machine. Where the eddy passes underneath the [fol. 168] curtains, there is an eddy back at that point. There is none shown in arrows here, but nevertheless, one exists. That is, in both machines, at the point where the air enters the egg chamber, from the channel, there is an eddy just at that point, in both machines. That does not affect the fact that the air is moving in current forms through the machine.

(Counsel for the plaintiff then offered in evidence the ten sheets of charts mentioned by the witness showing findings by Witness Taggart on Jamesway machine in normal operation some were admitted in evidence and marked Plaintiff's Exhibit No. 24, Sheets 1 to 10, inclusive.)

The witness then resumed under direct examination by Mr. Ely as follows:

The defendant in this case has had considerable discussion about the functions of this so-called air mixer down at the bottom of the egg chamber, and the fact that that mixer turbulates the current. Now, in order to demonstrate the effect of that turbulator, I disconnected the turbulator entirely and made this same series of tests without the tubulator or air mixer running, and I recorded those tests in the same manner, and I have a similar set of tests to show the readings under those conditions. Then, after that, I removed the fan at the top and ran the machine with just the turbulators or air mixers running, had them running in their normal way, but no fan in the top, and charted the effect in the same way. That is, my purpose in making these two comparative tests, one with the fan running, and the air mixer not running; and the other with the so-called [fol. 169] air mixer running and the fan not running was to determine which device or which instrument was the real impelling force and the controlling force in the machine,

and whether the air mixer had any appreciable effect upon the current movement of the air.

Referring to the first set of charts with the upper fan running and the so-called air mixer not running, the witness said: In the first place, I would like to call your attention to the fan speed, when the first set of charts were made, that I have just testified to, that is, the fan speed was 836 r. p. m. and the air mixer at the bottom was 205 r. p. m. Now, when the air mixers were discontinued so that they were not running, the fan speeded up a little bit, that is, the motor speeded up a little bit, so that the recording of the fan was 841 r. p. m. That was only five revolutions per minute difference. That difference might easily be made by difference in current from hour to hour in the town; and one of those tests was made one day, and the others were made a day or so later. The slight variation would not affect the thing to any appreciable extent. You will note that in the top tray, the average air movement or air speed upward was 138.9. With the fan running, but the air mixers not running; and the tray immediately below— A comparison shows that the speeds are substantially identical at all points. In taking these readings, I took the closest five feet and made no attempt to get closer than the five feet per minute. That is, it is either 100, 105 or 110, and the average in this case is approximately three and one-half feet per minute less, which could be an error due to [fol. 170] various changes. A speed of air movement of three feet per minute would not make a difference. In the sheet immediately below, which would be the ninth tray from the bottom, we have an average of 137 where, with both the fan and the air mixer running, the average was 135.3, and you can go through these feet, and you will find that the total average upwards is almost identical with the average that we had when both the fan and the air mixer were running. The average in that case was 135.75 and in this case 135.98.

Now, you will note that in the bottom tray there is a decided difference, particularly in the center of the tray. When the air mixer was not running, the air was not disturbed as it swept in from the corridors at the front and rear, and was much stronger near the center of the air chamber than it was when the air mixer was running. That broke up that strong current in the center, and the

upward current was more uniformly distributed by that air mixer.

Now, that is also illustrated in the second sheet from the bottom; but by the time you have gotten up to the third tray, you will find that the effect of the agitator or air mixer was of very little importance. That is to say, the air mixer—smooths out the currents in the lower tray. It operates really to smooth out the current and make it more uniform over the entire area. It does not increase the speed, that is, the average speed. It increases it at some points, and it decreases it at others. But it tends to smooth out the current. That is to say, as you come down to the air mixer down there, the current will tend to sweep in from the two channels and concentrate at the center. Now, when you have that mixer moving down there, it distributes it [fol. 171] over the area and allows it to come up in more uniformly through the bottom trays.

(Counsel for the plaintiff then offered in evidence its Series of tabulations of James way machine with fan running and air mixer not running, referred to by the witness and the same were admitted in evidence and marked Plaintiff's Exhibit number 25.)

The witness then resumed under direct examination by Mr. Ely as follows:

The effect and, really, the work which the air mixer would do, would be determined, by running the machine with the upper fan not running and the air mixer running by itself. When the air mixer was operated by itself, that is, when the fan was disconnected and the air mixer operated by itself, the speed of the air mixer was 208 r. p. m., and I found that in the top six trays there was no air movement. There was not sufficient air movement to make any impression on the anemometers at all. That is, the air was still in the top six trays. No air movement at all. So any effect whatever of that mixer would only reach up to the fourth tray. In the fourth tray from the bottom there are only four points at which the anemometers moved, and they were all downward current. Five feet per minute. Fifteen, twenty and fifteen. I might add that there is a big error in those, because an anemometer will not accurately show a speed of that velocity. As a matter of fact, an air movement or fifteen or twenty feet per minute is not de-

tectable. It is not suitable for that purpose of hatching [fol. 172] eggs. It is hardly detectable. You can hardly feel it. It simply shows that the anemometers did move and moved in that direction. And the third tray from the bottom, there was more movement, but with two or three exceptions, the movement was all down, and the second tray shows more movement still, but you will note that the downward movement is through the center of the tray for the most part. If there is any upward movement at all, it is at the outer parts or near the corners, and this is shown more pronouncedly on the bottom tray, in which we had substantial downward movements near the center of the tray, which shows a slight fan action with that air mixer as pulling it down to the center and throwing it out at the outer edges. The action of the air mixer as running here did have a tendency to push the air out and up these ducts at the front, and back, throwing off centrifugally at the ends of the blades, but there was no readings taken in those ducts to show what kind of speed there would be in there.

(Counsel for the plaintiff then offered in evidence the series of tabulations of Jamesway machine with air mixer running and fan not running, mentioned by the witness and the same were admitted in evidence and marked Plaintiff's Exhibit No. 26.)

The witness then resumed under direct examination of Mr. Ely as follows:

Now, taking the movement of air through the machine, as a mass, the fan at the top of the machine is decidedly a dominating influence and the air mixer has very little [fol. 173] effect upon the volume of air that is moving. It simply levels out the speed of the current through the bottom trays, and it also mixes, with that downward movement, the fresh air that is taken in at the bottom before it has an opportunity to contact any of the egg trays. I am showing the drawings that were put in evidence by the defendant in this case on the hearing on the preliminary injunction, and a similar drawing that was put in by me. Now, there is quite a space down between the lowermost egg tray in the defendant's drawing of the defendant's machine and the distance between the egg tray and the bottom of the machine as shown in mine. I am asked what is the explanation of that. The drawing that I prepared

was a drawing made of the particular machine that we purchased from the Jamesway people. Since that machine was purchased they have seen fit to build their cabinets higher so that they will hold twelve trays high instead of ten trays high, and although it does not show it here, there is space for two additional trays, and at certain times each week, that space is filled with trays. They said that, on placing new eggs in the machine, they should be placed in this position until they have time to clean up their hatch in the hatching compartment, so as to take seventeen and one-half and eighteen day eggs out and transfer them, so as to make space up here so that, on two days each week, there are twelve trays in the machine. Now, with the ten trays as shown in the defendant's drawings, the lowermost tray is further removed by two trays from the zone in that air mixer than it is as shown in my drawings. And any [fol. 174] effect that this air mixer has is confined in this machine, such as I have shown in my drawings, to the bottom two or three trays. And up to the third tray, in the machine as I have illustrated it here, the effect is for the air mixers to level out the current and distribute it more uniformly. That is to say, in this machine, as shown in the Defendants' drawing, the effect of the air mixer, is dissipated practically by the time it reaches the lowermost tray. And that twelve tray construction is shown in some of the catalogs of the Jamesway Company. It is shown in their later catalogs. Now, in the operation of the Jamesway machine there is nothing which requires the operator to take eggs out at the seventeen and one-half day period. There is nothing which requires him to take them out until the chicks actually begin to move from the shell. There is no provision made in here for holding the chicks when they begin to come out of the shells, so that they have to be taken out before that time. The eggs can remain in the Jamesway incubator without affecting the operation at all up until the nineteenth day. And the instructions state that you can hold them there until you have had a chance to clean up your hatch and clean up your incubator, and if your hatch happened to be slow, and you had your work arranged properly, you would expect not to make the change until on the 18th, maybe the 19th day. That is in Exhibit 10. It would be the third one of these large catalogs. 79, is the number? Yes, sir, 79, on page 24. On the

bottom of the page it shows the incubating compartment with the front doors removed. In the lefthand chamber, the [fol. 175] trays are entirely out, and in the right hand, it is filled with trays. There are twelve trays high in this machine. Then, in the book of operating instructions—that is, the last book of operating instructions, just before the catalogs—on the top of page 9, beginning with the second paragraph, in the 12-tray Jamesway incubator cabinet, the lower two tray shelves, are used only to put in trays on hatching day to start the eggs warming up while the hatch is being taken off. This keeps the hatching program on schedule without the necessity of employing extra labor to take off the hatch before setting the next eggs. As to how long the trays will stay in and operate that way, that would depend entirely on the operator. There is nothing to compel him to take them out until the 19th day, and in operation, you would not expect to take them out before the 18th day, as a hatch does not clean up exactly in 21 days. With some breeds or some flocks, you expect to take 21½ days before you take your hatch off, and then, by the time yon clean up your trays—and you are always busy at that time, getting rid of your chicks, moving them out—and wherever there are such conditions, it is customary for an operator to get that out of the way before he transfers his eggs.

I was in court and I participated in the trial of a number of cases that preceded this case. I have some diagrammatic views showing egg arrangement and current movement of air in various machines that were held to be an infringement. I have a chart that I have labeled "egg arrangement chart". In this we show the arrangement of the eggs in different types of incubators, Smith and [fol. 176] Buckeye and Jamesway, and three other machines which have been held to be an infringement of the Smith arrangement. In the upper left-hand corner, we have labeled this "Smith arrangement at the end of the hatch." You will note there, there are fourteen eggs high. The eggs that are colored blue are endothermic eggs, or eggs in the endothermic condition. Those that are colored red are in the exothermic stage. Some of them you will note labeled the eleventh day, and just partially colored red, and that is to indicate that they are just passing through the neutral zone.

Now, you will note at the bottom, I have twenty-second day. Those are eggs in the twenty-second day, or they are

chicks that have already hatched out. Twenty-one days is given as the period of hatching, but in operation, it is quite customary at the present time to not clean up the hatch until it is about 21½ days, so that you are in the 22nd day period.

Now, the line running from the fan at the top and around and through the eggs, the flow of the air cycle in the Smith machine, that is down from the fan towards the bottom of the machine, and up through the eggs in different stages of incubation.

Now, the second chart, or the second block shows the Smith arrangement one day later. At that time you will note that, in the bottom position, there are eggs in their nineteenth day of incubation. At this period there are no chicks emerging from the shell in the incubator. They are all eggs, and there are no chicks there coming out. You will note that the air movement is the same, and we have explained in detail how the air moves through there [fol. 177] and transfers the heat from the warm to the cold eggs; and if you will remember, we explained yesterday that a single particle of air does not contact all eggs in all stages of incubation in any one cycle. A given particle of air will only contact one or two or three eggs at the most, but some particles will contact and pick up heat, some will give up heat, and then they are thoroughly mixed together again and continue on their cycles.

Now, in the third block, we have labeled it "arrangement of the Boling-Jensma incubator". In this case, the egg arrangement is substantially the same in that the endothermic eggs are at the top and the exothermic eggs are at the bottom, but they only made one setting a week, so you see it is the first day, the eighth day, the fifteenth day and the twenty-second day.

Now, the difference in the air movement in this from the Smith was that the current was reversed. The fan forced the air upward to the top of the machine and thence downward through the eggs, towards the bottom of the machine, and back to the fan again, completing the cycle in that manner.

Now, the next block shows the Boling-Jensma machine one day later, in which there are no chicks emerging from the shell, and there will not be any emerging from the shell for four to five days later.

The Court: Do you claim it makes any difference whether the air went to the bottom or top?

The Witness: Yes, sir. The Court in this case, which [fol. 178] was before Judge Cavanah—the case was heard by Judge Cavanah in Idaho, and he held that this arrangement and this air movement was an infringement of the Smith patent.

Asked how this heat is carried from the exothermic to the endothermic eggs, the witness said: The warm eggs being at the bottom, and the air current being down, it would be carried from the bottom of the corridor up through the fan and back to the cooler eggs at the top, and you will depend upon the general diffusion and action of the fan for transferring the heat by the air. That is, the air was moving in a cycle in the Boling-Jensma machine, and the air, as it left the fan, struck first the cold eggs and then went to the hot eggs, then, from the hot eggs to the fan, then back to the cold eggs, and then the heat was carried from the hot eggs in the other half of the cycle than what it is in the Smith.

The next block is labeled "Robbins arrangement at the end of the hatch." Here we show fourteen eggs high, and you will note that the eggs are sandwiched for the different stages of incubation. There are five or six or seven stages here, and they are sandwiched at different points through the machine. That is, there was no regular order of setting, except to balance the turning device that he had in the machine.

The Court: I do not understand the purpose of showing the condition on one day, and then one day later.

The Witness: I will be glad to explain that. Wherever there are twenty-two day eggs shown, that represents the chicks that are out of the shell or chicks that are emerging from the shell. Now, as soon as those are taken out, then [fol. 179] the machine is operating just as the Jamesway machine is operating, without any eggs hatching in there; and in the case of the Jensma machine, after the eggs were taken out—after the chicks were taken out, then the oldest eggs in the machine were in their sixteenth day, and there was no eggs hatching in that machine; that is, there was no chicks actually coming from the shell until the twentieth

day, and you had the same comparable condition as you have in the James machine during that period.

My Ely: The process goes on just the same, your Honor, whether the chicks are hatching or whether they are not.

The Court: Yes, I understand the point.

The Witness: Now, the condition of the air movement in the Robbins machine was different from that in the Smith, in that the fan was a large fan, five feet in diameter, and was arranged on the wall instead of in the ceiling. These blades, these long blades at the side, represent the fan on the side wall which was five feet in diameter and which rotated at 200 to 210 R. P. M. Now, it forced the air centrifugally off of the ends of the blades to the floor, to the ceiling, and to the side walls. It carried it to the front of the machine, carried it to the opposite side of the machine from the fan, and then it was drawn back across the eggs in these different stages of incubation. So that the air after it left the fan, would only contact the eggs in one or two stages of [fol. 180] incubation until it got back into the fan again, where it would be sent out again on another cycle, and on the next circuit it might contact eggs in an entirely different stage.

The witness then resumed under direct examination by Mr. Ely as follows:

That is, the arrangement of the eggs and the passing of the air is quite different in the Robbins machine than it is in the present Jamesway machine.

The Court: Why would it not contact the same eggs? You have the same kind of current, do you not?

The Witness: The speed in this machine was quite a bit stronger than it is in either the James or Smith machine, and the air was strong enough to carry to the front of the machine, which was out six feet, and then it would be drawn across the trays. Now, one time that particular current of air might cross the top tray. On the next circuit it might cross the bottom tray, or an entirely different one, because it would have to pass through the fan, which was continually rotating and throwing it out centrifugally.

The Court: I see; it might draw it in at some different point?

The Witness: Yes.

The witness thereupon resumed as follows: I will not mention the Robbins arrangement one day later, because it simply corresponds to what has been explained before.

[fol. 181] Now, in the left-hand block on the center series, we have the arrangement in the Snow incubator, and there the same type of fan was used as in the Robbins, except that they had fans on two walls. There they had a cabinet almost exactly like the Smith cabinet in size, and they had fans on the walls instead of in the ceiling, but the arrangement of the eggs were sandwiched the same as in the Robbins arrangement. The air movement is substantially the same as in the Robbins; the method of moving was the same, and in that case the Court has held that it was an infringement. The Snow arrangement one day later has already been explained. It corresponds to the other cases. On the next block we have the arrangement in the Buckeye No. 48. This shows a type of arrangement similar to that in the Smith. Now, as I explained to you yesterday, they can sandwich the eggs in that machine, and it is recommended by the company that they do do it, although there have been times when they did not sandwich them. Then, in the next block, we have the Buckeye 310-A. That is the case in which the oldest eggs in that machine are in the eighteenth day period, and in that case the eggs are sandwiched. The heat transmitted from the hot eggs to the cold eggs in that by continuous cycling and recycling of the air. That is just as the Jamesway shows in the catalog; it does not make any difference how you arrange the eggs in the machine, you get the results. That is correct. The bottom arrangement shows the Jamesway incubator at different periods. The arrangement on the left is the arrangement that was used in one of the affidavits furnished by the defendant in opposing the preliminary injunction, and you [fol. 182] will note there that the fan is at the top, but it throws the air out centrifugally where it passes down; it is conducted down the two sides to the bottom; thence upward through the eggs in repeated cycles, and the air will be transferred there, or the heat will be transferred there in just the same way that it would be in the Buckeye 310-A, or in several of these other arrangements.

Now, I have also shown in the next block, the Jamesway one day later; that is, one day later you will have a different arrangement of eggs, so far as their heat-producing

qualities are concerned. That is, I have taken out 17½ day eggs that go to the hatcher and replaced them with fresh eggs, and that gives you a different shakeup of the eggs. The next column shows three and one-half days later than the left-hand arrangement. We have the same eggs in there that we had in the second block, but they are older; and then in the fourth block we have the arrangement one week later than our first block. Arrangement keeps changing from time to time, but the air is continually circulating in the repeated cycles over and over again, and the heat transfer takes place in just the same manner. That is still another mix-up of the eggs. I do not remember exactly what they said in the affidavits about what decided the particular permutations of eggs with respect to each. It was in the thousands. In any one of those thousands of permutations or order of egg arrangement, you get this transfer of heat. Due to the recycling of air. Now, there are some little marks here that I did not call the Court's attention to in each one of these drawings, those little inlets and outlets. [fol. 183] In the upper left-hand one, which was the Smith arrangement, you will note that immediately above the fan there is an arrow showing intake, and above the eggs an arrow showing outlets. That is the restricted outlets of the patent. Yes, restricted openings for intake and exhaust of air. Then, going to the Boling-Jensma arrangement, which is in the third block, you will note that the outlet is directly above the fan. Now, the intake in that case was immediately below the bottommost eggs on the side here where the air would be drawn in there and up through the fan, mixed with the warmer air before it contacts the eggs.

Then, in the Robbins arrangement you will note that the intake is on the right-hand side, directly back of the fan, so that the air that comes in there will be thoroughly mixed with the air before it strikes the eggs, and the outlet is in the top. Then, when we come to the Snow arrangement, the inlet is directly back of the fan and the outlet is in the top.

In the Buckeye arrangement, the inlet and outlet are, as in the Smith arrangement, in the upper left-hand corner. Down at the Snow again—Jamesway, I should say, the inlet is at the bottom and the outlet is at the upper left-hand corner. The inlet is directly underneath the air mixer which mixes that air with warmer air before it con-

tacts the eggs. That is, in every case, including Smith and these others, and even including the Jamesway, the cool air enters the machine, which is mixed with a current of air as it goes around the cycle. It has to be or you will have cold spots in the machine. And that is true in the Jamesway; the difference is that the Jamesway has a sepa- [fol. 184] rate instrumentality to do that mixing of the cool air.

(Counsel for the plaintiff then offered in evidence the Egg Arrangement Chart mentioned by the witness and the same was admitted and marked Plaintiff's Exhibit No. 27.)

The witness then resumed under direct examination by Mr. Ely as follows:

Now, taking that Exhibit 27, in the operation of the Smith incubator, we set twice a week, at three and four day intervals. Now, that means that chicks are hatching about three days out of the week. There is chicks emerging from the shell about a day and a half—about three days, yes, for each period. And during the rest of the time, during the other four days, there is no actual hatching of chicks going on in the Smith Incubator, that is, there are no chicks actually coming from the machine. That does not make any difference as to the operation of the machine, the process. In the Buckeye machine, take this Buckeye 48 machine, they set once a week, and that means that about a day and a half out of a week chicks are hatching from the machine, and during the remaining five and one-half days, no chicks are hatching. And during some of the time our eggs are in there, the oldest egg in that machine will only be sixteen days old. That does not make any difference in carrying on our process. As a matter of fact, in general parlance, the word "hatching" covers the entire period, the entire 21 days. That is, a hen starts hatching eggs the minute she sits on the eggs. And we start [fol. 185] hatching our eggs in the incubator as soon as you bring them up to temperature. Then, the hatching process starts. And the hatching process continues twenty-one days. I have reference in their books, in the defendants' books, to this matter of the terminology of the word "hatching" that I want to refer to, yes, sir, I have lots of them. A very good one to start with would be the first

book in the group, which would be a small book in the beginning. It is called, "Operating Reference Book." They apparently were issued at different times. They are almost identical, the first three, I believe, or four; they were put out in different years apparently. If you will turn to page 16, which has their temperature for hatching, and start to read that paragraph, "Bear in mind that eggs are more easily damaged in the first few days of hatching than in the later stages.". Now, if you drop to the next paragraph below that, the next to the last line, a statement is made, "Check these temperatures twice daily in starting the hatch."

In the next paragraph it reads, "Carefully increase the compartment temperatures as the hatch progresses." On the next page in the second paragraph, the last line, it refers to "The last of the hatch", and in the next line it refers to "during the latter part of the hatch".

There are numerous illustrations of this kind all through this book. If you will just turn back to page 11, at the top of the page, it says, "With smaller capacities it is usually desirable to start the hatch each week, filling about one-third of the machine for each hatch. Under such conditions, it is well to start the hatch." You have countless [fol. 186] examples of that, through the books. On page 4, in the third paragraph, under "Incubator Ventilation", it refers, in the second or third line, to "The period of the hatch." Later on it states, "During the first ten or twelve days of the hatch and during the latter part of the hatch."

There are repeated illustrations through all these books where it refers to "the first few days of the hatching", or "the first day of the hatching". Some of them refer to "the tenth day of hatching," while they are hatching eggs in the Jamesway incubator. There is not doubt whatever about the fact that they are hatching eggs in the Jamesway incubator. The definition of the word "hatch" is to cause to develop in and come forth from eggs.

I have a chart here showing the steps in the process of hatching eggs as carried on by the hen and as carried on by the prior art, and then as carried on in the Smith and Jamesway. I will just produce that chart and refer to it briefly. At the top of the page I have pointed out four steps that are necessary to hatch the eggs of the domestic fowl: proper temperature, moisture within the egg must

be conserved, sufficient fresh air, and the egg must be turned from time to time.

Now, in the left-hand column, I have pointed out the various steps that the hen uses in her natural method of incubation. 1: The eggs in her nest are all in the same stage of hatching. 2: The eggs are all arranged at one level. 3: The heat is applied from above. 4: The nest under the eggs is several degrees cooler than the hen's body. 5: The eggs are protected from drafts. 6: The eggs are cooled once or twice daily. 7: The temperature within [fol. 187] the nest increases as the hatch progresses. 8: Moisture is conserved by restricting air movement. 9: The eggs are turned frequently by rolling or shuffling.

Now, in the next column I show the methods used by the types of incubators in commercial use in 1915, and they follow the teachings of the hen in each of those nine steps. The eggs were all set at one time; they were all on the same level; the heat was applied from above; the air below the eggs was several degrees cooler than that above; the eggs were protected from drafts; they were cooled once or twice daily; the temperature within the cabinet was raised each week as the hatch progressed; and moisture was conserved by restricting the air movement. All air entering the incubator passed through the incubator once and was exhausted to the outside; and the eggs were turned frequently by rolling or shuffling.

The next column represents the Smith development. Smith revolutionized the whole theory of incubation. He broke away from the prior art in practically all of these steps. First, he had eggs in different stages of incubation. He had eggs at different levels. He applied heat to all sides of the eggs; the air was the same temperature above as it was below the eggs, substantially. He got away from drafts by applying forced drafts over the eggs. The early eggs were protected from drafts. He broke away from that by applying froced drafts about the eggs. He did not cool the eggs once or twice daily. He does not cool the eggs at all, and he changed the temperature of the cabinet each week as the hatch progressed; and he conserved moisture; [fol. 188] he restricted the air inlets but did not restrict the air movement. And he caused the air to move forcibly through the machine all the time. He restricted the amount of fresh air that could come in. He did not restrict the

air movement about the eggs themselves. He broke away from the turning, or the rolling or shuffling of the eggs by tilting them on the little end; and he utilized the heat of the eggs in the advanced stage to help heat those in the earlier stages, and by the same way, he used the heat-absorbing powers of the eggs in the earlier stages to help cool those in the advanced stage. Now, those things, 10 and 11, those are brand new in the incubator art in the fourth column we have the Jamesway incubator follows the teaching of Smith using the same identical steps. Each one of those steps are, word for word, the same, if I remember correctly, as the steps practiced by Smith.

(Counsel for the plaintiff then offered in evidence the Taggart chart showing steps in process of hatching eggs as carried on by the hen, and as carried on by the prior art, and as carried on in the Smith and Jamesway, and the same was admitted and marked Plaintiff's Exhibit No. 28.)

The witness then resumed under direct examination by Mr. Ely as follows:

The effect this Smith invention had upon the incubators of the type in commercial use in 1915 was it has rendered practically all those incubators obsolete. A very small per-[fol. 189] centage of them are still in use. Very few of that type are sold nowadays. And this defendant stuck to that old type of incubator up to about 1928 or 1929, and then he went over to the Smith type of incubation process, I noticed patent plates on the Smith and Buckeye machine while we were down there yesterday. To my knowledge, those machines been marked, both by Smith and Buckeye, and under this patent in suit for eleven years, to my knowledge. That is long prior to the time that the Jamesway Company started making these incubators charged to infringe here, I don't remember the exact date we purchased the Jamesway machine which we had, I think it was in the spring of 1930.

Mr. Toulmin, Jr.: You do not have to prove the machine. We admit our machine, your Honor.

The witness resumed under direct examination by Mr. Ely, as follows:

Generally, in the commercial incubators throughout the country, the percentage of commercial machines now, so

far as I know, that operate upon the principle of the Smith invention is approximately 75 per cent. That is part of the knowledge I get from running our business. We know what we have sold, and we know what our licensee has sold, and by our checkup, we know pretty well the total egg capacity in the country.

Now, in the Jamesway incubator, which we have been discussing, they hatch a plurality of eggs. They arrange those [fol. 190] eggs at different levels, I mean by that, well, in the old style incubators, eggs were all on one level, and in the Jamesway, they are arranged at several levels, one tray of eggs above another. That Jamesway incubator has a closed chamber. And it has restricted openings in that chamber. Those openings are of sufficient capacity for the escape of foul air without undue loss of moisture. I mean by that, that the air within the machine must be kept at a certain humidity. If you have too dry air around the eggs, it will dry the eggs out too rapidly; so that by keeping the humidity right, you prevent the moisture from evaporating from the eggs themselves too rapidly. That is, by having a very small opening and a small percentage of air interchange, you preserve the body of moisture which is in that air circulating through the cabinet. Now, the Jamesway machine applies a current of heated air to the eggs and that current of air is created by some means other than the variations of temperature. That is, it is created by the fan in the top of the incubator, and the movement of that air is of sufficient velocity to circulate, diffuse and maintain the air throughout the chamber at substantially the same temperature, in fact, the Jamesway catalog said practically that, in something I read the other day, almost word for word, and the air is vitalized, the moisture conserved. It is conserved by restricting the interchange of fresh air. The units of heat are carried from the eggs in the more advanced stage of incubation to those in the less advanced stage, for the purpose specified, that is, hatching eggs. Referring to the second claim, the Jamesway incubator [fol. 191] utilizes a power-driven current of heated air. That power-driven current of heated air is created in an adjacent chamber. That adjacent chamber, in the Jamesway machine is a fan chamber at the top of the machine. That power-driven current of heated air in the adjacent

chamber moves through openings into the egg chamber. Those openings in the egg chamber are at the bottom of the ducts at the sides, at the front and rear of the machine. Referring to the third claim, the Jamesway machine applies a vertically directed current of heated air to the eggs. That vertically directed current is in an adjacent chamber. The ducts at the front and rear of the cabinet are adjacent to the incubator chamber. This current of air that is in the adjacent chamber moves into the egg chamber through upper and lower openings between the chambers. That is, the egg chamber is the chamber in the center, and the other chamber is either one of the chambers on the side of the corridor. There are upper and lower openings between those two chambers. The upper opening in the Jamesway is into the eye of the fan and the lower is at the bottom of the incubator chamber—egg chamber. That current is created by mechanically moving means. Referring to the fifth claim this machine of the Jamesway is an incubator. It has a closed chamber. It has a vertically disposed partition to provide a corridor. There is a vertical partition at the door in the front and at the back of the cabinet, behind—two vertically disposed partitions separating the egg chamber from the air passage. Those partitions provide two corridors. There is at least one corridor. And that has got openings into the upper and lower passageways to the chamber. There is a corridor here on the [fol. 192] side with a passageway at the bottom, and also a passageway at the top, out into the corridor on the other side. And that has egg trays arranged at different levels in the chamber. It has a power-driven fan. That power-driven fan creates current in the corridor. That current that is created circulates through the passageways and egg trays. The chamber has restricted openings for the intake at the bottom of the chamber and for the outlet is at the upper lefthand point, or regular outlet in the incubator. Those restricted openings are of sufficient capacity for the discharge of foul air without the loss of moisture, and they can be regulated. They are regulated, as a matter of fact, from large to small, according to the weather conditions. There are means to heat the air circulating through the chamber. They are the heating pipes shown here at the top. There is also an electric heating ring,

electric heating element. I have been referring in these answers, to the chart, Exhibit 14.

This concluded the direct examination of the witness Joseph I. Taggart.

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ANDREW H. DORENKOTT

By agreement of Counsel the next witness ANDREW H. DORENKOTT, called as a witness on behalf of Plaintiff and sworn, testified as follows:

Direct examination.

By Mr. Ely:

My age is forty-three, and my occupation is, Auditor for [fol. 193] the Smith Incubator Company. I live in Fairview Village, that is a suburb of Cleveland. My duties with the Smith Incubator Company are: Keeping the records with reference to the accounting of the Smith Incubator Company. In that connection, I keep a record of the number of machines manufactured and sold by the Smith Incubator Company under this patent. And I also have access to the records, or have care of the records with respect to the royalty payments made by Buckeye Incubator Company under the patent. The royalties paid by the Buckeye Company are paid to Dr. S. B. Smith. I keep the records for Dr. Smith. I check the matter of the number of machines manufactured and sold by Buckeye and the royalties paid at various periods from the records furnished Dr. Smith by Buckeye. I check those with Buckeye's shipping records. Now, I am asked to furnish a list or tabulation of the number of machines and the value of the machines sold by both Smith and Buckeye. I have that with me. This is the report to which I refer.

Buckeye Incubator Company started paying royalities to Dr. Smith in 1917. My tabulations on the payments of royalties carry into July, 1933. 10,400 units have been manufactured and sold by Buckeye Company during this period, under the royalty agreement. The value in money of those units is $11,908,530.61. I have for some time kept track of the egg capacity of those Buckeye units. We have checked the egg capacities as far back as could be checked

from the time we started keeping this record. And so far as known, egg capacity is concerned, the egg capacity of the Buckeye incubators which have been sold under the [fol. 194] Smith Patent is 100,144,256. With respect to the Smith incubators which are manufactured and sold by Smith Incubator Company, from 1922 to August, 1933, the number of units was 1,905. During that period, the total value is $12,318,094.26. The egg capacity is 91,033,000. And summing up the total of the two, the combined total units, 12,305; the sales value, $24,226,624.87; the egg capacities, 191,177,256. I went down this noon, and saw the machines which we had introduced in evidence here in this case, among them the 310-A machine. That is the 310-A Buckeye machine, known as the incubating machine. The Buckeye Incubator Company pays royalties to Dr. Smith on machines of that type. That is, there are the two types, the one in which the 21-day hatching is carried out, and the one in which the 18-day hatching is carried out, and they pay on both of those types.

(Counsel for the plaintiff then offered in evidence the witness Dorenkott's Tabulation of number and value of machines sold by Smith and Buckeye which was admitted and marked Plaintiff's Exhibit No. 29.)

The witness then resumed under direct examination by Mr. Ely as follows:

I know that the Buckeye Company paid royalty on those eighteen-day incubators, because within the last year I have checked the royalty reports furnished Dr. Smith by the Buckeye with their shipping records, and in those reports were indicated the 310-A and 510-A. And the 310-A and 510-A are the incubating units and they pay royalities on them.

[fol. 195] Cross-examination.

By Mr. Toulmin, Jr.:

I am asked if I receive any royalties from Buckeye Incubator Company on the so-called separate hatcher of the Buckeye Incubator Company. I have no recollection of ever seeing any separate hatchers reported on the reports. I am shown that letter of the Buckeye Incubator Company of June 30, 1931, with an attached circular, and asked to

look at that and see if that is a machine of the type on which the Buckeye Company has been paying royalty or has not been paying royalty. I have never seen their hatching unit, a separate unit. I cannot say if this has ever been included in their royalty reports. All I know is the numbers of the machines on which they are to pay royalty. These are given to me and I check them with their records.

In making this report to the Court as to the commercial operations of Buckeye and Smith, I have no personal knowledge as to the mechanism involved upon which the reports are based, nothing as to the mechanism of the particular incubator that is, Buckeye Incubators—other than that. I do know that, on which they pay royalties. And I only know that, however, on the basis of the number of the machine, by the serial number and its model number, but I do not know the internal construction. No, I don't know the internal construction, not of the hatcher. I did, of the incubator, because I have seen several of these incubators. But so far as I know, I do not know anything about the separate hatcher of Buckeye. I know the numbers I have checked covered the incubating units; that I [fol. 196] am positive of. I can only identify the numbers which I have checked, where they have paid royalties. I am asked if Buckeye has paid royalties on any separate hatchers, I don't recall them ever paying any. I don't know the numbers they go by, because I have never checked the separate hatching units, on account of not having them on my report.

Mr. Ely: There is no argument about that, Mr. Toulmin. They do not pay on their separate hatchers. We do not claim that your separate hatchers infringe, so I do not see the materiality of the point.

Mr. Toulmin, Jr.: I am not asking about ours. I am asking about Buckeye separate hatchers, and I would like to have this witness, who comes as an accountant and makes a report, answer that question, if he can. If he cannot, let him say so.

The Witness: The units on which Buckeye pay royalties are 310-A and 510-A. Now, if they are hatching units, then they paid royalty on them.

The witness then resumed under cross-examination by Mr. Toulmin, Jr.:

Those are the units on which they paid royalties, the numbers are 310-A and 510-A.

Redirect examination.

By Mr. Ely:

They pay royalties on incubators. I am referring to the incubating units in connection with hatching units, [fol. 197] when I answer that question. They do not pay any royalty on the hatching units to which the eggs are transferred at the end of the process, on the 310-A and 510-A. They have never paid royalties on those.

This concluded the testimony of the witness Dorenkott.

* * * * * * *

At this point it was agreed that Frederick Bruce Hutt might be put on the witness stand as a witness on behalf of the defendants.

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FREDERICK BRUCE HUTT

FREDERICK BRUCE HUTT, being called as a witness on behalf of defendants, and sworn, testified as follows:

Direct examination.

By Mr. Toulmin, Jr.:

Q. Will you state your name and residence?

A. Frederick Bruce Hutt, of St. Paul, Minnesota.

Q. And your occupation?

A. Professor of Animal Genetics and Poultry Husbandry in the University of Minnesota.

Q. You are a Doctor of Philosophy, are you?

A. Yes.

Q. How long have you been at the University of Minnesota, Dr. Hutt?

A. Since the fall of 1928.

Q. Will you sketch very briefly your educational qualifications, with particular relationship to matters of poultry, [fol. 198] or eggs and embryology of eggs?

A. Well, I have taken the course in agriculture offered by the University of Toronto at its Agricultural College at Cuelph, Ontario, and got the usual undergraduate training in agriculture, specializing in poultry husbandry and animal husbandry.

At the same time, I kept a considerable number of poultry on my father's farm at Georgetown, Ontario. In fact, I financed my college expenses that way.

Following graduation, I took a position at the University of Manitoba, Winnipeg, as lecturer in poultry husbandry. After fifteen months, I went to the University of Wisconsin, where I spent one academic year in post graduate study in genetics and zoology.

On my return to Winnipeg, I took part time work in zoology at the University of Manitoba for two years. In the summer of 1927, I went to the University of Edinburgh and spent one calendar year there and some three days, studying animal genetics and physiology of reproduction.

Q. What degrees do you hold?

A. From Toronto, Bachelor of Science and Agriculture; from Wisconsin, Master of Science; from Manitoba, Master of Arts; from Edinburgh, Doctor of Philosophy.

Q. Did you recite—I do not think you did—the professional positions you have held in connection with the teaching of these subjects?

A. Yes, lecturer in poultry husbandry at the University of Manitoba, and extension poultryman for the Manitoba Department of Agriculture at the same time. At the Uni- [fol. 199] versity of Minnesota, successively, Assistant Professor of Poultry Husbandry, Associate Professor of Poultry Husbandry, and now Professor of Animal Genetics and Poultry Husbandry.

Q. At what institution, Minnesota?

A. At Minnesota.

Q. Are you a member of any learned societies in this branch of science?

A. Of the American Association for Advancement of Science, the Canadian Society of Technical Agriculturists, the American Society of Zoologists; the American Ornithological Union; the American Genetic Association; The American Society of Geneticists, and some other general honor scientific societies.

Q. What is your particular field of research in this general art?

A. I have two main fields of research. The first is to find causes of embryonic mortality in fowl, to reduce the tremendous losses from eggs that fail to hatch; and secondly, the study of heredity in poultry, with particular reference to characters of economic value.

Q. Now, Dr. Hutt, will you describe to us what takes place in the incubation of an egg from the first day that incubation starts, to the last day when the chick hatches?

A. At the stage when the egg is put in the incubator, it is in what the embryologists call a gastrula, which is somewhat like a raspberry cut in two, and in the next 96 hours, practically all of the organ systems of the chick are established. By 36 to 40 hours, the heart is developed and beating; blood is formed, and the circulation outside of the chick is united to the blood vessels in the chick. The embryonic membranes are formed and begin to spread out [fol. 200] over the yolk. The embryonic function, the embryonic function coating, is brought into action. The eyes are distinctly well advanced by the fourth day. The different regions of the brain are formed. The limb buds from which the wings and legs grow, are formed, and the embryonic membranes are started on their course of development.

Thereafter, development consists largely of expansion growth of these organ systems that are laid down as they assume their final form found in the chick on hatching.

There is an outward visible change at ten days, ten and one-half days, when the down first is found. So far as the physical position of the chick goes, there is a change. When it is incubated the first day or two, the chick lies at right angles to the long axis of the egg, and the head directed to the observant's left when the small end is pointed away from the observer. As development proceeds, the embyro turns on its left side, with the exception of some abnormal cases, where they lie on the right side, and it is in that position until about the fifth day, when it begins to show a certain amount of movement; and from the fifth to the eleventh and twelfth day, there is a considerable amount of movement. At that time the chick is parallel to the long axis of the egg, and that is the position in which it is found normally at hatching.

At seventeen and one-half or eighteen days the process of hatching is begun. That consists of the drawing into the abdomen of the yolk, which has not been utilized for food up to that period. At a little later date, on the 20th day, sometimes on the 19th day, the chick begins its mechanical [fol. 201] process of hatching. It lies at that time with the head tucked under the right wing and the beak directed toward the air cell. The air cell is a space between the two shell membranes which is formed by the evaporation of the contents of the egg after laying. The beak is directed forward. I am describing now the normal position. We have deviations from this that are pathological.

The beak is thrust forward and enters the air cell. Up to this period, the chick has not been breathing through its lungs. When the beak enters the air cell, it begins to breathe through the lungs.

Following a rest period, the chick thrusts the beak and head against the shell and normally succeeds in, as we say, pipping it. After this is done, with intervals for rest, the chick rotates on its own axis around in the egg. Its position in the egg is much like that of a trussed fowl: the two legs are drawn up on either side of the breast; the feet are pointed outward. It is by moving these feet that it works its way around the shell, breaking the shell three-quarters of the way around, or slightly more or less. By that time it can get the head out, and by movement of the head and wings, can effect its withdrawal, which completes the hatching.

Q. How much of these operations that you have just described, takes place beginning about the 17½-day to the end of the operation?

A. I would not say that the process of hatching began on the 17½ day, but on the 18th day. Then the inclusion of yolk begins, and from then to the 21st day, we have the process of hatching.

[fol. 202] Q. And what do you mean by inclusion of yolk, Doctor?

A. The yolk at that time is enclosed in the embryonic yolk sac. It is just a membrane put out by the embryo and folded around it, and that is drawn in by what is commonly called the umbilicus, into the abdomen of the yolk, and it carries the yolk with it.

Q. Do you mean abdomen of the yolk, or abdomen of the chick?

A. Abdomen of the chick.

The Court: Does this embryo form on the outside of the yolk, or work inside the yolk?

The Witness: In the entire stage it is on the outside of the yolk.

Q. And during this period of 17½ to 18 days, on to the end, what conditions of temperature are occurring, so far as the chick and the egg are concerned?

A. The temperature tends to rise as a result of the muscular work that is being done.

Q. And how does this amount of temperature compare with the temperature that was generated in the previous period of the egg's history?

A. It is very much more.

Q. And what is the relative condition as to humidity between the period prior to the 17½ or 18 day and subsequent thereto? Is the period subsequent thereto one of demand for greater humidity or lesser humidity?

A. It is desirable to have relatively high humidity to prevent the shell membranes and the embryonic membranes from drying out and imprisoning the chick.

Q. Now, with reference to the period of, say, from the tenth to the seventeen and one-half or eighteenth day, is [fol. 203] that period the most critical period in the history of the egg, or are there other periods that are more critical, on the basis of mortality?

A. Other periods are more critical.

Q. What is the critical period, or what are the critical periods in the history of the egg from the first to the twenty-first day?

A. We have a little peak of mortality at from three to five and one-half or six days, a slight rise in the mortality curve, but the greatest mortality occurs from the 18th to the 21st day. In that period, in my own findings, 47 per cent of all the mortality occurs.

Q. Have you had any experience with the old type of incubator having the single tray and the lamp, such as described by Mr. Taggart here during the last several days that you have been sitting here?

A. Yes.

Q. Will you, in turn, tell the Court whether you have had any experience with that type of incubator in placing in the single tray eggs of more than one age?

A. Yes, I have done that.

Q. Will you tell the Court how that happened and why you do that?

A. I think it happened, first, because when I had a few eggs that I did not have clucking hens available to brood them with, I got the agricultural college, near which I lived, to allow me to put them in one of their machines, and later I worked at the Agricultural College and operated their incubators, and then I would sometimes, if I had one hundred sixty or seventy eggs to set, and a 145-egg incubator to put them in, I would fill up my 145-egg machine and put the remaining 25 in another one until I had candled out the first [fol. 204] machine and removed the infertile eggs, when all could be restored to the one original machine.

Q. And then you had eggs of different ages in the same incubator?

A. Yes.

Q. About how long ago was it that you did that?

A. 1913 and 1914 my first, and 1918, later——

By the Court:

Q. They would not be eggs of different age, would they? You said you had 160 and 147, or some such number, you put in one incubator, and the others you put in another?

A. The other machine into which I put the surplus was one containing eggs that started to incubate at an earlier age, but which had been candled and the infertiles removed.

Q. I thought, as you first expressed it, it did not explain your last answer.

By Mr. Toulmin, Jr.:

Q. You might also tell the Court your age. I forgot to ask you that.

A. I am thirty-six.

Q. You said you used the income, during this period, from your incubation operations, to finance yourself in college as you grew up?

A. During the four years I was going to college, yes.

Q. Are you familiar with what the poultry men and scientists refer to as bacillary white diarrhea?

A. Yes.

Q. Will you describe to the Court, very briefly, what disease that is?

A. It is a disease caused by the organisms salmonella pullorum.

The Court: What does that mean?

[fol. 205] The Witness: It is the name of a bacteria.

Q. Go ahead, Doctor.

A. This is carried from one generation to another in the ovary of the hen, and sometimes in other organs. Hens infected can lay eggs containing the organism. When these eggs hatch, the chicks in turn can carry the organism, and they can, in turn, infect other chicks, and some survive; so that the disease is perpetuated from one generation to another through the egg.

Q. And how is the disease acquired by the healthy chick, from some source of infection; is it by mouth?

A. They can acquire it by picking at the droppings of infected chicks, and they can acquire it in incubators in which diseased or affected chicks are hatched, by inhaling bits of down, that are floating about in the incubator.

Q. What effect upon the distribution of the disease has the use of air that is blowing through the incubator during the hatching of the eggs?

A. Well, inasmuch as it spreads this down all through the machine it greatly increases the opportunity for infection and does increase the incidence of the disease.

Q. As I understand it, a chick may inhale bits of this down, the disease travels through the pulmonary tract, and eventually finds its way for its disease functions in the bowels of the chick, is that right?

A. Yes. Of course, I should qualify that by saying that this only occurs if there are diseased chicks in the incubator or eggs carrying the disease.

Q. Now, in your practice, in the course of teaching at the University of Minnesota, what do you teach at the uni-

[fol. 206] versity on the question of whether or not to hatch separately or hatch all eggs in the incubators in which the other portion of the incubation has been done?

A. I have to be very careful in my position about saying anything that would be directly antagonistic to one machine and used as a sales point by another. So what I do

is point out to the class that this disease, which is considered one of the worst to which chicks are exposed, is spread in that type of machine.

Q. What do you mean by "that type of machine"?

A. One in which the down is circulated about.

Q. One in which air is flowing during the hatching period?

A. Yes.

Q. You yourself, in your hatching at the University of Minnesota—I assume you do some hatching?

A. Yes.

Q. You yourself, do you practice the plan, customarily of hatching separately, or do you hatch all in the same cabinet with the incubating eggs?

A. We hatch separately from the incubating cabinet.

Mr. Toulmin, Jr.: That is all of the witness; you may ask him.

Cross-examination.

By Mr. Ely:

Q. How old did you say you were?

A. Thirty-six.

Q. Thirty-six? Where did you live during your boyhood?

A. Guelph, Ontario.

Q. Then anything which you did in 1913, you did up in Canada, did you?

A. That is right.

[fol. 207] Q. And do you have any authority in the text books for a division of the 21-day period of hatching or incubation between the last three days and the first fifteen or eighteen days?

A. Yes.

Q. Is there any authority for you in that statement?

A. I am not quite sure what you mean by authority.

Q. Have you any authority for the statement, or do I understand you to say that the period of the first eighteen days is not part of the hatching period?

A. Yes.

Q. That is not part of the hatching period?

A. No.

Q. And the last three days are the hatching period?

A. Yes.

Q. Now, do you know what the custom was with regard to the use of those words in 1915?

A. To that I can only reply that I am not aware of any change in the concept in that period or since that period.

Q. Then you do not know whether, in the year 1915, the word "hatch" meant the whole 21-day period, or, as you say, now, it means only the last three days?

A. I am not familiar with the use of the term "to hatch" to mean the whole 21-day period.

Q. You never heard of a hen hatching eggs when she sat on her nest—you would not say she was hatching eggs when she sat on the nest the first three days?

A. I would say she was sitting, but I would not call it hatching.

Q. Would she be performing the operation of hatching on the first day?

A. Oh, no.

Q. On the second day?

A. No.

Q. On the third day?

A. No.

[fol. 208] Q. When would she start to perform the operation of hatching?

A. When those chicks in the eggs begin to hatch.

Q. And would you say the chicks were hatched on the 21st day?

A. Ordinarily.

Q. And you would say that people generally consider the period of 21 days divided, eighteen days of some period or other, and three days hatching period?

A. No. It is commonly said the incubation period for the fowl is 21 days, and that can be separated into the period of growth and development, and finally, the last process of hatching, which is the same as saying the gestation period for a calf is nine months, but the birth period is the matter of a few hours.

Q. You think the word "hatch", then, is the same as the word "birth"?

A. To me.

Q. Do you have any authority for that, any good authority, except yourself?

A. That is the general concept among biologists——

Q. Wait a minute. Have you any authority for that? I am not asking you your opinion. I am asking what your authority is. I understand what your opinion is, but I want to know what your authority is.

A. May I ask what kind of authority you would like?

Q. I would like some authority other than your own opinion?

A. You mean a text book?

Q. Yes.

A. Oh, yes, there are lots of them.

Q. Have you those text books with you?

A. Yes.

Q. Can you tell us what they are?

A. Yes. You can get "Lippincott Poultry Production;" "Jull Poultry Husbandry."

Q. When was that published?

A. 1930.

Q. That is a recent book?

A. Yes.

[fol. 209] That was not published back in 1915, at the time this patent was drafted. All right, what else?

A. I think the best other one is Lippincott's Poultry Production.

Q. And when was that published?

A. Fourth Edition, the latest, 1927.

Q. You have not any authority that goes back to that time, that you can point to, have you?

A. Well, I can find lots of places with instructions for incubation which will say "at hatching," this procedure, "such and such procedure must be followed."

Q. Have you found any authorities in your rambles through the books, and so forth, where they refer to the entire period of 21 days as hatching period?

A. No.

Q. You never found any such authorities?

A. Not that I am aware of now.

Q. These books that were published in 1930 and 1927 have been since this B. W. D. became such a pest, have they not? This B. W. D. has not been recognized as such a pest until within the last few years, has it?

A. Since about 1915, as I recall it.

Q. And later on—as a matter of fact, did not the study of B. W. D. particularly start about 1928?

A. No, it did not.

Q. You want to say that, do you?

A. Yes.

Q. You want to testify to that fact?

A. Yes.

Q. And this idea of separate hatching, you might say, would be an improvement on what has been done before. That improvement took place about 1927 or 1928; is that what you want to testify to?

A. I am not quite clear what the question is that you would like me to answer.

Q. You claim, as I understand it, that the idea of hatch- [fol. 210] ing chickens in a separate enclosure is an improvement over hatching them in the same enclosure with the incubating eggs?

A. I have not claimed that. I have said that I do it.

Q. Well, do you think it is an improvement?

A. Yes.

Q. And that is an improvement, which, so far as you know, originated about 1927 or 1928?

A. Oh, no, that has been done before that.

Q. Then there is nothing new in this idea of hatching chickens in a separate container from the ones the eggs were incubated in?

A. Well, I wouldn't say that it is necessarily a new process.

Q. Now, you say it is desirable to have a high humidity at hatching time; is that necessary?

A. Yes.

Q. It is necessary, you say?

A. Yes.

Q. You could not carry on incubation without that?

A. Oh, yes, you could get some chicks out, but you get a higher number of proportionate chicks if you have high humidity.

Q. That is, that is an improved way, perhaps, of operating?

A. Yes.

Q. Is it to increase your humidity?

A. Yes.

Q. Do you know when and who suggested the idea of increasing humidity at hatching time?

A. I can't tell you. When I ran my first incubator, I was told to do it, and have done it ever since.

Q. That is an old trick, too, is it not?

A. Yes.

Q. That is an old trick in the trade, is it not?

A. Yes.

Q. Now, this B. W. D. is transmitted between the infected and non-infected chicks even in the hen's nest, is it not?

A. I would rather, say, after they get out of the nest. [fol. 211] Q. But even in the hen's nest, you have the transmission of the disease while the chicks are in the nest?

A. No, there is not likely to be infection in the nest, but in the brooder, after they get out of the nest.

Q. But is there not infection in the hen's nest when your chicks are in there, after they came out of the shell, and while they are still in the nest, there will be infection back and forth?

A. There will be infection there, but the chicks are less likely to pick it up until they get out.

Q. And there is also infection occurs in the still air incubator?

A. Yes.

Q. This bacillary white diarrhea which lands on the down is sufficiently light—the down is sufficiently light so it floats even in the air of the incubating chamber, if it is still air?

A. I won't say that. I will say the disease organism is there.

Q. And it floats in the still air of the incubating chamber?

A. It might to a slight extent. It is possible to increase the humidity until it does not——

Q. As a matter of fact, Doctor——

Mr. Toulmin, Jr.: Let him finish his answer.

Q. You know it does, do you not? You know it floats in the air of the incubator?

A. I don't know the extent to which the air moves in all incubators, or any incubator to which you may refer.

Q. I am referring to the still air incubator of the type

in which there are no fans. Now, that germ is light enough, and floats in the air of that chamber, does it not?

[fol. 212] A. If it does, it is to a very slight extent, because we always find it gathered underneath the hatching tray. It drops by gravity.

Q. As a matter of fact, does it not float in the air in the incubator room, and will it not float from one incubating cabinet over to another and infect chicks in another incubating cabinet?

A. I have no knowledge of that.

Q. You never heard of that?

A. No.

Q. How high a rate of humidity would you put, at hatching time, in both types of machine, in the still air type and in the forced draft type?

A. I would like to have a relative humidity of between sixty and sixty-five per cent.

Q. In which machine?

A. At hatching time, for any egg.

Q. In either machine?

A. Yes.

Q. So it does not make any difference what type machine you have, the humidity should be raised at hatching time?

A. Yes.

Mr. Ely: I think that is all.

Redirect examination.

By Mr. Toulmin, Jr.:

Q. Dr. Hutt, I overlooked asking you one question that I should have asked you on direct—there are so many details, your Honor. Do you recall Mr. Taggart here stated that there was such a thing as a placenta in an egg? Is there such a thing in an egg?

A. There is not.

Q. Is that found in the human body and during the process of gestation?

A. In all mam-als.

Q. But not in an egg?

A. No.

Mr. Toulmin, Jr.: That is all.

Mr. Ely: That is all.

This concluded the testimony of the witness Frederick Bruce Hutt.

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[fol. 213] JOSEPH INSKIP TAGGART, recalled as a witness on behalf of Plaintiff, testified as follows:

Cross-examination.

By Mr. Toulmin, Jr.:

In connection with the Smith patent in suit, it teaches the placing of eggs in the incubator cabinet, in which they remain for their entire period of 21 days. And during the period of 21 days, according to the plan given, the eggs increase in heat as the age of the egg progresses. During the period as shown on this chart, Exhibit No. 3, after the 17½ day area indicating the quantity of heat given off by the eggs during the remaining period of its life before it hatches, which has preceded that deadline of 17½ days is greater. I haven't figured up to see just what it is. It is greater. I don't know just what it is. In this incubator of Dr. Smith's, shown in his patent in suit, the plan is to have in the incubator eggs of different ages, some of which are quite cool as they are put in, and others of which are a little warmer, and so on, until you get to the period of maximum heat during the last three or three and one-half days. In the preferred plan given here there are supposed to be eggs in several different stages of incubation. I wouldn't say in all stages of incubation, I would say several. If you set three times during the hatch, there are only three stages. If you set every three and one-half days, you would have six stages.

Referring to all days of the life of the egg up to hatching time; you have all days in the incubator at the same time, [fol. 214] and those eggs are put in there in different groups according to your convenience. And the eggs are, therefore, in there, of different ages as I have referred to it in my direct examination.

I am asked as to that age which extends from the period of 17½ or 18 days to the 21st day, and if during that period, the heat given off from those particular eggs has a material influence or effect upon the temperature of the rest of the eggs and upon the air which is passing over the eggs. That

heat is utilized in the process of keeping the rest of the incubator warm.

As to what proportion of the total heat those eggs give off in proportion to the remainder of the heat from the eggs in the earlier stages prior to the 17½ days; what percentage can be had there to take over, I would say that more than 50 percent. of the heat is developed during the last three days, but I can't give you the exact percentage. With this 50 percent. of the heat that is given off in the last three days, Dr. Smith, according to the teachings of his patent in suit, utilizes it, to help keep the temperature of the air up to incubating temperature. It is utilized in helping in warming the incubator air and also in warming the eggs that are absorbing heat.

Now, with reference to the defendants' machine, of which we have a sample drawing here produced by me, Exhibit No. 15.

With reference to that machine, the eggs for the last several days, from the 17½ days; are customarily not placed [fol. 215] in that machine. Now, assuming that to be the fact, the eggs are out of the machine, assuming that to be the fact, that they are out of that machine, those eggs for the last three or three and one-half days, which are out of the machine before me, the eggs are not used in any way in connection with the incubation of the eggs that are in the machine. Those eggs, for the last three or three and one-half days, are put over in an entirely different machine. Any heat of these eggs that are put over in the separate machine, the so-called hatcher of James, is not used in any way to influence the incubation of the other eggs in the first 17½ days. After they are taken out of this machine, they have no influence on this machine at all. Coming back to the Smith patent, as the patent itself describes it, there is no mention made of moisture conditions at the last three and one-half days any more than any other time.

In the beginning of 1928, we came out with recommendations advising them to increase the moisture on the last three days, or during the time the chicks were actually emerging from the shell; that is, for a period of twelve or 24 to 36 hours. But at that same time we also came out with very definite instructions to increase the moisture content in the entire machine very much higher than we had ever used it during hatching time before that. That is,

prior to 1928 we had no definite instructions on the Smith machine as to the humidity conditions, and any humidity recommendations that we did make called for a smaller amount of humidity even at hatching time than we later recommended for the entire period, and at that time we [fol. 216] gave out recommendation that you would operate with a wet bulb reading of 84 to 85, except at the time when the chicks were actually emerging from the shell, at which time you would increase it to 88 to 90 with bulb reading. We have not recommended to carry it as high as 92. Dr. Smith always considered it advisable to have moisture, but the quantity of moisture was not considered important to the extent that it is now, and I could never find text books or any recommendation by an incubator manufacturing Company to carry the humidity at anything like as high as I am now recommending, until after the summer of 1928.

Prior to the time Dr. Smith made his discovery, the moisture problem was recognized because they knew that, if they put too much ventilation through their incubators, that the eggs would dry down too rapidly. At that time they had no adequate means of checking their humidity. The only gauge that they used was to check the air cell. They would test the eggs from time to time and see how much the air cell had devloped in the eggs, to see how much they had evaporated; and I don't know of any text book or anything of that kind that would tell you the exact percentage of moisture that is desirable for hatching in the old type machines. The hygromoters that they used were not accurate for still air machines, and there are very few of them, within reason, that are accurate today for a still air machine; and they were confronted with the problem—they talked about the problem, they knew they must not dry them down too much, but as we were operating prior to [fol. 217] 1928, we were not drying them down any more than we did in the still air machine, but in the present machine, operating as I told you here a while ago, we do not begin to dry them down as much as we did in the still air machines. 100 years ago, they knew that they had to conserve moisture. They knew, that if they put too much fresh air through the machines, they would dry the eggs down too much, and the problem was to have a forced draft and at the same time not take in too much ventilation, so that they would not dry the eggs down too much. At that period

they did not know the point to which it was most satisfactory to dry them.

That was 15 years ago. At to what I was referring to, 100 years ago, they were hatching 100 years ago. At that time it was necessary to control the ventilation in order to prevent too rapid drying to conserve moisture. That was the problem that confronted Dr. Smith.

So that prior to Dr. Smith, we did have the problem of conserving moisture, and the effort was made prior to Dr. Smith, to conserve it by regulating the amount of air that would dry out the eggs. I am asked what did Dr. Smith have in his patent that I think represented an advance over what I have already said was known as of 1916 or 1915? Simply restricting the ventilation, which was not necessarily an advance, but combining forced draft and staged incubation was an advance. So you have to have these special things I mention, plus anything else the patent may call for, in order to make up the combination of the advance.

As to what Dr. Smith from my point of view has done. [fol. 218] He combined staged incubation, arranging the eggs at different levels, and arranging them in columns, and applying to them a forced circulation of air of sufficient velocity to keep the temperature substantially uniform throughout the chamber. Restricting the openings, regulating the ventilation, was the necessary part of it.

Q. Would you agree that he had a method of hatching eggs by arranging eggs in the column and applying heated air forced about the eggs, the heated air being adapted to the eggs in various stages of incubation, as a method representing his invention?

A. Well, I am not going to answer that without having a chance to study the different points that you have raised there.

Mr. Toulmin, Jr.: Just read the question to him please, Mr. Reporter.

(Question read.)

A. Does that state he had eggs in different stages of incubation?

Mr. Toulmin, Jr.: Read it again, Mr. Reporter. I think it is entirely plain.

(Question read as follows):

"Q. Would you agree that he had a method of hatching eggs by arranging eggs in the column and applying heated air forced about the eggs, the heated air being adapted to the eggs in various stages of incubation, as a method representing his invention?").

[fol. 219] A. If it is definitely in there he had the eggs in different stages of incubation, and also that that air was adapted not only by temperature, but by moisture, I would say, yes.

Q. Would you agree that Dr. Smith had this method: a method of hatching eggs by arranging eggs in a column and applying heated air impelled about the eggs, the heated air being adapted to the eggs in the various stages of incubation?

A. If it is adapted by means of both temperature and moisture, and if the draft is of sufficient velocity to keep the temperature substantially uniform, I would say yes.

Q. And will you please answer whether this is a method of Dr. Smith, as set forth in his patent, as you understand it: a method of hatching eggs by arranging the eggs in a column of various stages of incubation, and applying heated air impelled about the eggs, the heated air being adapted to the eggs in various stages in incubation?

A. There is one factor that is being left out in each of those. There is one factor that is not set clear, and that is——

Q. Will you please answer the question, yes or no, and then explain?

A. I can't do it.

Q. Well, I ask that you answer it, yes or no, whether it is or is not, and then explain why or why not?

A. There is one factor that is left out in each of those statements.

Q. Just a moment, I would like to have a yes or no answer.

Mr. Ely: I think the witness should have the right to answer——

The Court: The question is whether that comprehends [fol. 220] the whole idea, I suppose. Now, I think the witness can state whether it does or whether it does not.

Mr. Toulmin, Jr.: He can answer, yes or no, and then make any explanation he wishes.

A. It does not comprehend the whole matter because it does not bring out the fact that the air recirculated through the machine. That same explanation will apply to each of the foregoing questions along about the same line.

Q. Does Dr. Smith have a machine of this description: an incubator having a chamber with racks and trays for the eggs, and a power-driven fan to produce a flow of heated air through the racks and trays, the fan being arranged to force the air from the bottom of the chamber upwardly around the trays to the top thereof? Please answer yes or no, and then explain, if you wish.

A. It does not, unless you recirculate the air with sufficient velocity.

Q. Does Dr. Smith have a method of this kind: a method of hatching eggs by arranging the eggs in various stages of incubation in a column, the eggs in different stages of incubation being in different levels, and applying heated air driven at a predetermined speed about the eggs, whereby the heated air will be adapted to the eggs in various stages of incubation? Please answer, yes or no, and then explain, if you care to.

A. It is not right, unless you recirculate the air so that you are using the same air over and over again.

Q. Does Dr. Smith have this method in his patent: a [fol. 221] method of hatching a plurality of eggs in different stages of incubation by subjecting all of said eggs to heated air and by supplementing the natural draft of the heated air with a forced draft to increase the velocity of heated air about the eggs, without changing the temperature of heated air, whereby the units of heat will be carried from the eggs in the more advanced stage of incubation to those in the less advanced stage? Please answer yes or no; then explain, if you wish.

A. It is too long a problem; I am not going to answer definitely without having some time to study it. I think that is substantially correct, but there might be some slight changes that are necessary.

Q. I will have the reporter read it to you, then you can study it.

A. If you will bring it to me and let me study it——

Q. Well, if you are willing to adopt that,—I want to be perfectly fair; is it substantially correct, Mr. Taggart?

A. I think it is, but I can't answer a question of that kind

without having a chance to study it. That is too important a question.

The Court: I think it was a long question and involves quite a number of points in the patent; and I think he ought to have an opportunity to study it.

Mr. Toulmin, Jr.: I am perfectly willing to give him all the time he pleases.

The Court: Do you mean by your inquiry, that that may not be all of the teaching, but that those are certain teachings of the Smith patent?

[fol. 222] Mr. Toulman, Jr.: Yes, sir, that is the complete method; I want to know if that is a method that this witness will adopt as being the method of this patent, so that we can define this patent.

The Court: That is a construction of the patent. I think he ought to have an opportunity to see just what the question is.

Mr. Ely: I have not objected to this course of examination because, apparently, that is nothing that is in the patent at the present time, your Honor.

The Court: Well, it may have a bearing. I think examination on the different stages of the patent is perfectly proper, but I think the witness should have an opportunity to understand thoroughly just what the inquiry is. Perhaps if the stenographer reads it again, you may state whether that is the teaching; or as counsel suggests, if it is not, you may add anything further you want, any explanation.

Mr. Toulmin, Jr.: That is why I suggested that he have the opportunity. I want to be perfectly fair.

The Court: It is quite a long question. He should have an opportunity to thoroughly understand its bearing. Perhaps the stenographer will read it again or you can have the printed question; you may direct his attention to it in that way.

Mr. Toulmin, Jr.: I will have to take it out of my notes.

Mr. Ely: May I have that question?

[fol. 223] Mr. Toulmin, Jr.: I would like to have the witness answer this now, now, without any advice from the arguments of Counsel.

Mr. Ely: I want to know where you got the language.

Mr. Toulmin, Jr.: I got it out of my notes. That is sufficient for my purpose.

Q. Now, Mr. Witness, I will hand you this, and you can have the reporter read back my question to you to be sure there is no slip in my dictation.

(Question read as follows:

"Q. Does Mr. Smith have this method in his patent: a patent of hatching a plurality of eggs in different stages of incubation by subjecting *by* all of said eggs to heated air and by supplementing the natural draft of the heated air with a forced draft to increase the velocity of heated air about the eggs, without changing the temperature of heated air, whereby the units of heat will be carried from the eggs in the more advanced stage of incubation to those in the less advanced stage? Please answer yes or no; then explain, if you wish.")

A. No, because there is nothing in here that indicates that the air must be recirculated. From what is given here, the air might all pass through the incubator once and then out. There is no indication that the air has to be recirculated, because there is no suggestion of restricted openings [fol. 224] to take in just a limited amount of fresh air.

Q. What would you add to that to make it Dr. Smith's invention, from your point of view?

A. You are asking a question that is not decided even by the Patent Office in two or three minutes, and I do not care to be bound by a simple statement of that kind. It is my understanding that you people charged several hundred dollars to get up a claim and I do not think I should be called upon to tell you definitely just what should be added to this to make it cover the patent; but if you add to this the recycling currents of air, or something that compels the air to recycle through the machine, so that you have the entire machine substantially at the same temperature, then I think it would be all right.

Q. And you do not read that into that language?

A. There is nothing in here to state that this air that passes through there would be recycled. It states "supplementing natural draft of heated air with a forced draft to increase its velocity". It does not say anything about whether it passes out of the incubator, as soon as it is

passed through the eggs, or whether it has to recycle or recirculate back through the machine.

Q. Is that all?

A. Yes, sir.

Q. Thank you very much. Now, in connection with this method of the Smith patent, I call your attention to the operating instructions for the steam-heated Smith incubator, a copy of which was produced here in Court by your Counsel when we exchanged copies of the public agents of [fol. 225] the respective parties; and I particularly call your attention to this language and then I will hand you the catalog so you can see it for yourself:

"The machine is so designed that the proper conditions are provided for the eggs in each stage of incubation. This is accomplished by setting fresh eggs at the top of the ma-machine and moving them down as the hatch progresses. In this way, the eggs in the advanced stages of incubation are near the bottom of the machine where the temperature and ventilation are most favorable for the hatching eggs."

Will you state whether this is a correct description of the machine made and operated under the patent in suit? I will hand you this.

A. That is a correct statement of the description of the machine. It was written by one of our men.

Q. Mr. Toulmin, Jr., shows operating instructions to the witness.)

A. That is correct.

Q. And what eggs are you referring to as the hatching eggs in that description?

A. The eggs that are placed in the hatching rack when it is no longer necessary to turn them.

Q. And what age are those eggs?

A. Those are in the 19th, 20th and 21st days.

Q. And what are the conditions of temperature and ventilation that are most favorable for the hatching eggs referred to in that description.

A. The temperature of the incubator.

Q. Well, what is that temperature.

A. Our operating temperature is 99.

[fol. 226] Q. And what is the humidity?

A. The humidity, wet bulb reading, is 84 to 85, except at the time the chicks are actually coming out of the shell, at which time we increase it to 88 to 90.

Q. And you will find in that instruction book in your hand the description of carrying the humidity and carrying the particular temperature we have mentioned, will you not?

A. Yes, sir.

The witness then resumed as follows:

I don't remember anything about stating in my direct examination that in this Smith machine we use coils or pipes through which cold water flows for the purpose of refrigeration or balance, but in this particular machine we do circulate cold water for cooling at certain periods in the hatch. We circulate the cold water for cooling whenever the temperature of the incubator runs too high. The factors that make the temperature too high are the out-side temperature and the manner in which the operator is handling it and the heat that is developed by the mass of eggs. And that heat will be developed in increasing degree as the eggs get older until the chicks begin to pip. After they begin to pip and begin to roll out of the shell, then the evaporation from their body has cooling effect and the heating problem is not as pronounced after they have pipped as it is just before they have pipped the shell. As to how many hours we use the cold water coils to balance the incubator, there are some operators that do not use them at all. It is my recommendation at the present time that, if you have full heat at a certain [fol. 227] time during the hatch and along about the 19th to the 20th day, that they turn on a little cold water and then allow the control equipment to furnish the necessary heat, and that keeps it at the exact temperature, easier than it is to let the temperature creep away from you a little bit and then turn it on; but some people do not use cold water at all. We may use it any time. I would say it is just as important to use it when there were no chicks coming on as it is in other times, but it is more commonly used during the hatching period. The problem is not so great after the chicks begin to roll out in good shape as it is before that. My attention is called to page two of this instruction book, and particularly the language, "A

cooling coil is provided for use on hot days or to counteract heat given off by chicks at hatching time." That is correct.

I am asked as to where do I find, in the patent in suit, any teachings of the necessity of using cooling coils in order to regulate the interior conditions of the incubator. I don't remember that there is any shown in there. I don't think there is; there isn't anything said about it that I remember now. Yesterday, when we examined our Smith incubator and his Honor and the rest of us were over there in our building, on the back of the Smith incubator was a large cabinet that had an air intake opening, and from that large metal cabinet a pipe ran up the back of the incubator, and thence across the top and communicated with the air inlet openings, or openings in the top of the incubator.

On that particular one, the only thing in the large metal [fol. 228] box that stood behind the incubator is a water spray, and there is a baffle in there, or water eliminator, which will take the extra humidity out of the air. That particular device is not on this machine down here. This is an electrically heated machine, and that description there was for a steam heating equipment that we were using at the time that catalog or instruction book was put out.

That one that was there was to humidify the incoming air, to raise the humidity of it, and in our present device we only have a spray in there that we turn on for hot dry days to cool the incoming air. It is a conditioning cabinet for preparing the air before it enters the machine, to take care of certain conditions.

I would not say it is a necessity to supply some additional preconditioned moisture before the fresh air goes into the cabinet; it makes it easier to do it. It makes it easier for the average operator if he can condition his air that enters the machine so that he has a uniform air condition.

That is due to your varying atmospheric condition. We operated for ten or twelve years before we had that type of device.

That particular device that you show there was intended to be used in all climates, all the year around, and the one I am referring to, on the electric machine down there in the storeroom is used only for hot days, not necessarily dry weather, it is just hot days. We have a damper on that intake opening in that steel box. We have a spray

nozzle there; the water spray is only turned on and advisable under certain condition. When we are using it, we use [fol. 229] the water spray. There is not anything of the kind taught there in the patent. You do not find any system of pipe running across the top of the incubator, shown in the Smith patent, such as shown on that piece of apparatus of Smith that we saw yesterday. I mean the duct across the top.

May I make a correction? On Fig. 3 of the patent it shows one intake opening at the center of the machine, and then there is a chamber that goes over to the valved slide above each fan, but we have never considered that as a part of the patent, and this device that we have down here is a new addition. This apparatus I have just mentioned is only the inside cabinet.

Referring to the straps 28 that are located at the bottom of the tilting stacks of trays, is the patent it states that those straps 28 can preferably be used—they are part of a preferable arrangement, the purpose of them being to force the air that has passed under the curtain, to pass through the two lower trays before it can get over into the air column; placed between the trays or between the columns of trays.

By the Court:

Q. I do not understand that answer. I thought those straps there had something to do with the control of the different tiers of eggs.

A. No, sir. Those straps, as indicated there, consisted of a strip of cloth that was fastened to one side of the rack and then down and fastened to the other side of the adjoining rack, so that the air coming from the corridor would be forced to pass through the bottom two trays on [fol. 230] the turning rack rather than passing out the air column between the trays, tray columns.

Q. Is that shown on this machine here?

A. That is not shown on the machine, and in actual experience, in placing columns closer together, it is found that they are not necessary. The Patent states that that is a preferable arrangement.

The witness then resumed under cross examination by Mr. Toulmin, Jr.:

The patent states at the bottom of the first column, page 2, "as heretofore referred to, and as the eggs further advanced in incubation are contained in those lower trays, and as the danger is that the temperature will rise in those eggs to a point injurious to incubation, the improved method disclosed herein permits circulating air to act as a medium to prevent overheating at this stage of incubation."

In the machine that we saw yesterday, of Dr. Smith, in our store-room, that machine had none of the top horizontal trays.

Those horizontal trays are shown and described in the preferred apparatus of the Smith Patent. As to where I find, in the Smith Patent, any teaching about turbulence that I have referred to from time to time on direct examination, the patent describes a draft of air of sufficient velocity to do certain work; and from experience, I know that you cannot have a draft of sufficient velocity to do this work without it becoming turbulent when it passes through the obstructions that it has to.

The patent speaks of a forced draft of air and currents of air, and any current of air moving under the conditions [fol. 231] that it has to move here must be a turbulent air, —turbulent current, if it has sufficient velocity to do that work.

The patent itself does not say "turbulence" but it does say "forced draft of sufficient velocity".

There is no word "turbulence", that I know of, in here.

As to where I find a teaching in this patent of setting the eggs in any other arrangement than that which is described in the patent of placing the cool eggs at the top, and as they become warmer, moving them down, step by step, there is nothing explained here. The preferred apparatus describes it that way, and there is no other way described. The preferred apparatus describes the method as has been stated, but it also states that it is obvious that the fans can be so arranged and can be operated at such a speed as to cause the hot air to circulate enough to keep the temperature throughout the chamber between the limits of 100 and 105. That is all that I can call to mind right now.

As to where I find any teaching in this patent of so-called sandwiching of eggs, that is, interleaving or staggering them, according to age, such as the method that I have

described the James Company have used, and which I have illustrated, the bottom series of figures in our Exhibit No. 27, the preferred apparatus as described in here does not describe an arrangement of that kind.

The patent does not show any means of restricting the outlet or outlets 28; that is, there are no dampers or slides, [fol. 232] or any other means by which the size of the openings 28 can be changed. There is nothing given as to the exact size of them either, and there is no means shown of restricting them. I am asked if it is not true that in this Smith Patent that I have before me, you are constantly adding fresh air and constantly discharging air; that is, you are constantly taking in air through the inlet port 24 and constantly discharging air through the outlet ports 28, and my reply is:

Unless the inlet is completely closed, that is the case. It states that 24 is a valve. It does not say whether it can be completely closed or not, or it does not say that it cannot.

Assuming first, that it is open, you are constantly taking in fresh air and constantly discharging foul air or used air. If the inlet 24 is closed, as I have suggested, then there would be no discharge of foul air because you are taking in no fresh air, unless there would happen to be some back current through one of the 28's and out of the other, which could happen. It is not the intention of it.

The action of the fan forces the air—starts the air on its way, and the construction of the machine makes it follow certain paths and any part of it that happened to reach the hole and pass out would be purely a matter of chance; that is, the part that happened to go out, the particular part.

The power for forcing the air from the fan 18 down to the bottom, and around and up through the egg column, and whatever part of it goes out 28, that power is the fan. The [fol. 233] air, being light and not swift has to be moved by pressure set up by the fan.

As to whether you push the air and compress it sufficiently, in order to get it to move down to the bottom and turn and go out through the opening 28, a fan has just as much suction power on one side of it as it has pressure on the other.

Being asked whether on the outlet side, pressure is the force set up by the fan on the air that forces the air down to the bottom, and turns it and causes it to go up to the top

of the egg column, where a part of it may go out 28 and the other part may blow over the barrier 22, through the fact that the so-called pressure has no more effect in here on the movement of the air then the suction has, the witness replied that pressure and suction cause the air to move. As to whether pressure alone would do it, this type of fan is very inefficient for creating pressure, and it could be pressure that starts it, but it is the cycle movement and the whirling action of the blade, as a propelling action; it is the propeller.

If you are talking about static pressure, that is one thing. This is a propelling or a forcing action. Now, your term "pressure" might apply here and it might not, but it is a forcing action. The propeller blades throw the air down and pull in a corresponding amount of air on the opposite side. You cannot throw any down unless a like amount comes in on the opposite side.

On that assumption, it is true that the fan 18, after the air passes by the fan, and as it passes by, is given an im- [fol. 234] petus, a force, by the fan, which drives it down around and up through the egg column, as described in this patent, the fan starts it down, and also the pulling force on the other side helps to bring it up through the egg column.

A certain amount of air would go out through the opening 28 because of the difference in temperature, the temperature inside being 99.

A certain amount of air will go out there regardless of the fact that this is not a convection machine. It will go out there by temperature; there is no question about that. The rest of it will go out by reason of the fan pressing it. The incoming air is sucked in through the opening 24 behind the fan. A portion of the returned air is sucked in behind the fan, over the barrier 22.

Asked as to whether there is a pressure condition in the egg column in order to get the air to move in two paths, one part of it out of the machine against atmospheric pressure, and the other part back into and back of the fan, the witness said: I will not agree that the pressures in the egg columns are greater than atmospheric pressure to any extent. The friction of the air going over the top of 22 causes air to be drawn in at 24. It creates a pull there and causes some extra air to come in through 24. 22 is the

beam on each side of the fan compartment. It is shown in Fig. 1.

The Court: Well, I was looking at Fig. 3. It is not shown there at all.

[fol. 235] Mr. Toulmin, Jr.: Yes, sir, you can see it behind the pipes. Shall I point it out?

The Court: It is not numbered.

Mr. Toulmin, Jr.: No, it is not numbered. It is just a board that runs across.

The Witness: In matters of actual construction, if we do not want to reconstruct the openings—if we do not want to valve the openings, or make them adjustable, we regulate the space between 22 and the ceiling so as to make that space small or large, and by so doing, we control the amount of fresh air that the machine will take in.

Whether I ever tested out the condition of the air in our egg columns to determine whether that air is under pressure or under suction, I don't know how to make a test that would mean a great deal. I have not tested it with an instrument of that kind. I do know this, that it is not possible to have any marked difference in atmospheric pressure inside that machine from the outside.

Referring to Plaintiff's Exhibit No. 11, I recall standing inside of the Smith incubator in our demonstration yesterday, and placing an anemomoter about the fourth tray up from the bottom of the tilting trays on one side of the machine, and then closing the curtain and viewing the anemometer about the fourth tray up from the bottom, of the tilting trays on one side of the machine, and then closing the curtain and viewing the anemometer through the isinglass window in the curtain while the machine was running. [fol. 236] What the reading was that I took yesterday, and Dr. Greene took at the same time, I don't remember. It seemed to me it was about 70 feet per minute, 65 or 70. Whether it was 60, I am not really sure. That is my impression of it.

Whether on this chart of mine, Plaintiff's Exhibit 11-a, I have marked about the point where that anemometer was located the numeral 60, it was farther back than that; and furthermore, this is diagramatic. In one column it might be 60, in another column it might be 70, or in another column it might be 100.

So far as vertical location is concerned, I think the anemometer was located on the tray below that 60, but it is about the right place, but it is farther back from the curtain.

I would say it was about two-thirds of the way back. It was as far back as I could reach in with my arm.

Yesterday we found from 60 to 70 feet per minute as the air flow on the Smith incubator at that point. The incubator that we saw yesterday, with the exception of the single demonstration tray of china eggs, had no eggs in it. This 60 to 70 feet per minute was taken with no eggs in the machine except those few.

When I made these tests which resulted in Exhibits Nos. 11-a, 11-b, and 11-c, the Smith incubator was filled with eggs. That was a 52,000 egg machine.

Whether it was completely filled, I think there was one setting—the tests were made at different times. There were certain times when there was one set of 7,000 eggs not in there.

These readings were taken a year ago or more, in your [fol. 237] absence, and they were taken in a machine that was in regular operating condition, full of eggs. Understand that there are certain days in there when there are 7,000 eggs more in them than there are on other days. I can't give you the exact number. I don't know whether it was six full settings, or five full settings, or seven full settings. It would depend on the particular day the tests were made. The tests represent a study of several days, and on hatching day it has seven or eight thousand more eggs in there than it has on other days. The variation in eggs, in number, which I do not recall exactly, would range between 45,000 and 52,000.

As to how many eggs between those figures were in the Smith incubator when I made the tests which I have brought in here to show the Court in Exhibit 11, it was operating in its regular manner, full, and I don't know whether they were all made on hatching day, or whether any of them were made on hatching day.

Q. How can you tell me it was full when you just told me you did not know whether it had forty-five thousand or fifty-two thousand? That is a big difference.

A. In the regular operation of the machine, it will vary between those points, and I can't tell you whether it had the maximum number or minimum number.

Q. Very well. Now, will you turn and tell the Court whether, having eggs in the Smith Incubator, filled or partially filled, as you have described, it would have any influence upon the rapidity of the passage of air through that incubator in making the circuit?

A. Yes, it influenced it. The mass of eggs would take [fol. 238] up perhaps fifteen per cent. of the cubic contents of the air there. That is, the mass of eggs would occupy about 100 cubic feet, which would be about one-eighth—a little less—of the total cubic contents of the machine. That would have a material bearing upon the speed at which the air was traveling, given a constant full or empty condition.

As to what I figure to be the cross-sectional area of the James Egg chamber, the defendant's machine, the cross section dimensions of the entire egg chamber from wall to wall. I don't think the figures are here. As I remember, the tray is 27 inches square. I don't have that right here. The space occupied in the egg chamber by the number of eggs that James carries in the egg chamber when the egg chamber is filled, is approximately eight and one-half cubic feet. The cubic feet of the chamber itself is approximately 39 cubic feet, or 30 feet—it is in that figure—and the working parts occupy a certain space. I have forgotten what it is.

Prior to 1915, farmers who had incubators of the single tray type may have repeatedly put eggs of different ages, different stages of incubation, in the same tray, in the same incubator, and subjected those eggs to conditions of heat, moisture, ventilation and exit of foul air.

I know it was not the practice: it was not the custom, and it was not the recommendation of the manufacturers at all. I do not deny that it was done. I have done it.

In our laboratory, in school, when we wanted to carry eggs only for eight or ten days, for section work and for investigation, we would keep adding eggs every day, to [fol. 239] the same machine. We never carried them through to hatching time when we were doing that. If we had carried them, they would have come off after 21 days, in successive groups, but they would not have hatched as well as if they had been conducted otherwise, because the conditions are not the same. You have to turn part of them and others you don't. It has been done. It is not recommended. They are not built for that purpose.

Those incubators had openings for fresh air and openings for the exit of foul air. They had heat applied to them. If the fresh air came in and the hot air went out there was some air circulation; it was convection current.

If you put eggs of different ages in the same tray, the heat of the old eggs would not be transmitted to the air, to go to the younger eggs. In a condition of that kind, the hot air would rise to the top of the incubator and out. There might be a slight diffusion due to the convection currents. If there was, it would happen.

In those incubators we had moisture. We regulated the moisture according to the age of the eggs that were being incubated. As to increasing the moisture during the last three or four days of the hatch, it was customary to keep the incubator closed after the chicks began to pip. One of the main reasons was to conserve moisture in there. We conserved moisture by regulating the air inlet or outlet openings, or both.

The use of air circulation of some sort, the use of fresh air and the use of letting out foul air, the use of moisture and the use of heat, were all elemental facts applied in incubation prior to 1915. The conservation of moisture by [fol. 240] regulating the ventilation openings was one of those things that a man did when he had an incubator prior to 1915.

I recall testifying about the Blue Hen incubator, a picture of which I produced, Plaintiff's Exhibit No. 7. That particular catalog was gotten out in 1922. It was representative of the mammoth incubators of that period, prior to 1915. In this Blue Hen construction we have a stack of incubators, one over the other, with only one tray in each incubator, in which eggs are placed, of different ages, an age to each compartment.

It is not a necessity that there are different ages in each incubator compartment, but that is the recommendation. To my knowledge, that was practiced.

When the top group of eggs was gotten along several days, they were moved and put into the next succeeding compartment below. That was continued until you got to the bottom cabinet or bottom incubator, as we call it. Each of these compartments had an air inlet, an air ventilation opening. Each compartment had moisture. Each compartment had heat from the common heating system.

Each compartment regulated the moisture by regulating the ventilation openings and by the size of the moisture pans within the compartment. As to how they regulated those moisture pans, I think they had different sizes. I am not sure whether they covered any of them or not. In some cases, they put sand in them; different devices to help more moisture evaporate.

The air inlet opening on that particular one was near the bottom. I don't know whether it was at the rear or [fol. 241] whether it was right on the underneath side. It might have been at the rear. I am not sure. I would have to see the cross-section. I cannot recall whether it was at the rear or bottom. It is natural that it is at the rear of that machine, judging from other features, but I am not sure of it.

Regarding the air inlet in the Blue Hen being at the rear, and in the James old style at the back, I am not sure on that particular point; I would have to check it. The air outlet openings are at the top. The air that is coming out of the top of the bottom incubator through the outlet opening would rise and go up against the bottom of the next succeeding cabinet above; it would go right out into the room. If there was an air inlet opening in that cabinet above, some of that hot air might go in there and pass into that egg chamber.

The James Company started out with the old sectional type of incubator, and they are today still selling those incubators, to my knowledge. They are using the sectional type as their hatcher; they are simply using the same machines in many cases.

The James hatcher consists of a box with air inlet and air outlet openings, with ventilation, a moisture pan or water pan, a suitable tray or trays, and the application of heat. That instrumentality, that structure, is the same structure that was used before by the James Company for both incubating and hatching for the entire 21-day period. Now they do not use it for the entire 21-day period, but only for the last three or three and one-half days.

This morning I produced a set of diagrams, Exhibit No. [fol. 242] 27. The diagrams of those manufacturers other than Smith and Buckeye represent a construction or constructions that have been held to be infringements of the Smith patent.

I have not produced here and shown the Court those constructions and egg arrangements held by the District Courts and Courts of Appeals as not being infringements of this Smith patent.

As to Exhibit No. 27, in the views of the James egg arrangement, at the bottom, the lowermost egg in each instance is not the oldest egg. In all the other constructions above this James layout, in each instance the bottom egg is red, but it does not necessarily follow that that would indicate the oldest egg. I have shown it on this drawing, it happens to be in this particular case, but that is not a requirement of the Buckeye.

Q. I am asking you as to what this drawing shows, now. We will come to that later. In the constructions other than the James incubator, diagrammatically, on Exhibit 27, do you find any instance of an incubator defendant, manufacturer defendant, using a separate hatcher, or were there constructions which you have illustrated thus in which the entire operation of 21 days was performed in the incubator?

A. The entire operation is performed in all of these with the exception of Buckeye.

Q. And that was not a question of infringement by contest in court?

A. No, it was not decided in court.

Q. So far as any contested litigation is concerned, purported to be illustrated by Exhibit 27, the question of separate hatching was not before the Court?

A. That is correct.

Referring to Exhibit 14, showing the defendant's ma-[fol.243] chine, I made my tests with the machine full of eggs on both sides. I also made it with the machine not full of eggs. These particular records are diagrammatic of the condition when full of eggs. These particular designations as to speeds on Exhibit 14 were taken when the incubator of James was full of eggs on both sides.

As to the comparative chart, Exhibit 11-a, b, and c, of Smith, I can not tell now whether the incubator on which I made those tests was full of eggs; I can't say whether it had forty-five thousand or fifty-two thousand. It was operating in its regular manner. It would depend on the day on which the tests were made.

Referring to the chart marked on the motion for preliminary injunction as Defendants' Exhibit No. 19, the drawing in the left hand column looks very similar to the Petersime construction, which was the defendant's construction in the case of Smith vs. Petersime. I think I have seen this cut in the patent; I am not sure. In that Petersime construction the drum, or the circle which contains the trays, had eggs in, I think three different stages of incubation, or two different stages, and the hatching eggs—or the actual emerging from the shell took place in the top of the machine.

By the Court:

Q. What is the idea of having that circular construction; is it suspended there for something?

A. It is suspended at each end on the central shaft, and the paddle passed around that somewhat like the reel on a grain binder. It resembles that.

[fol. 244] Q. So it shifted?

A. That was for stirring the air. It passed around in that manner, and I think the other line, which is at the rear—it might be confusing—represented the belt that drove that.

Q. That would move around in the air in the chamber there?

A. Yes, sir, like the stirrer in an ice cream freezer.

The Witness: That Petersime incubator consisted of a closed box with air inlet and air openings, one or more of which was controlled by a slide. The incubator had moisture in it. The Court did not hold that it had air currents in it. The Court held it had an agitation of air or a mixing of the air as distinct from definite currents; at least, that is my recollection. The Petersime machine, in the left-hand column of Defendants' Exhibit 19 on the injunction motion, which Exhibit is before me, had in it a stirrer consisting of one or more flat boards or blades that were carried around in a circle by arms, in order to engage with the air.

Q. And when that stirrer and its blades did engage with the air, it would first push it on the one side, and pull the air on the other side, and then the air would slip off tangentially from the ends of the boards or sides of the boards?

A. I don't believe that is the way you explained it before to the Court.

The Court: He is asking if that is the way the structure operated.

The Witness: It does have an action similar to that but the Court did not interpret it that way.

[fol. 245] Q. I am not asking you——

The Court: He is asking your description of the construction.

Q. You are an engineer.

A. There is a narrow space between the drum and side wall, and as the paddle would pass through there, it would create an air movement and would stir the air in no uncertain terms.

Q. And that paddle turned around about how fast?

A. If I remember correctly, it would be 200 or 210 r.p.m.

Q. That is correct; about the same speed as this turbulator or air stirrer in the James machine, is that correct?

A. Yes, sir.

In this turbulator or stirrer of the James machine as that is rotated, the air is engaged by the arms of the stirrer so as to press that air in front and draw it from behind, and the air will fly off centrifugally as the stirrer rotates, just the same as a centrifugal fan. I don't think I would say that the operation of the Petersime arms or blades was just the same as the turbulator or stirrer of the James machine. The structures are entirely different. As to the air in the Petersime flying off tangentially from the blades of the stirrer, or centrifugally, the blade, as I remember it, is about an inch and five-eighths wide, and it is not in the shape of a paddle at all. It is a strip that runs lengthwise along the drum.

Referring to the upper or moving means in the James machines, it consists of a flat disk with some vertical flat fingers or arms sticking out from the periphery of the disk. This [fol. 246] disk with the arms rotates about a vertical axis. When it does so, these flat blades engage the air and the air is thrown out centrifugally from the center. It first pushes the air and as a result of the pushing, the air flies out centrifugally along the face of the blade. That will inevitably tend to create a slight suction behind the blade, due to the fact that the blade is moving faster in the air than the air

can catch up with it. That is true of all blades of that type, and of this flat-bladed type.

Turning to the second illustration, reading from the left, on Defendants' Exhibit 19, on the injunction motion, and with reference to being familiar with the construction of the so-called Bundy incubator which was the incubator of the Blum suit, I am familiar with the present Bundy incubator. That drawing does not represent the present Bundy incubator that I am familiar with.

I understand how that particular Bundy incubator operates, as illustrated there on Exhibit 19. This particular machine contained stacks of egg trays, and through the center of the machine was a central shaft on which were mounted boards approximately four foot long, if I remember correctly, they were mounted one board—a stack and a board, and a stack and a board, as shown on the top of the page, and the shaft had a pulley at the end of it, and the boards were rotated slowly in the machine.

By the Court:

Q. Well, you mean, by the boards that rotate—you do not mean between the layers?

A. Here we have stacks.

[fol. 247] Q. Yes, I see.

A. Of trays, and these boards were almost five inches wide.

Q. They are mounted on that shaft?

A. They are mounted on that shaft, at the center.

Q. I thought you were referring to some boards between the trays, between the corridors.

A. That is the space in between.

Q. Those are the boards referred to?

A. Yes, sir.

Q. Mounted on the shaft?

A. Yes, sir. They were at different angles.

The Witness: In that incubator of Bundy, or Blum, there were stacks of trays having eggs of different ages of incubation. That same thing was true of Petersime. As to the order in which those eggs were arranged in the Blum case, the Bundy construction, I am not sure just how those were set up. I would have to look that up. The standard Petersime arrangement is that the trays are of different sizes,

and they have to put them in in a certain order to keep the drum balanced. They were sandwiched, but that can be varied to a certain extent. They are sandwiched just as we call the James here, this arrangement we have been talking about, of sandwiched eggs. The Petersime machine is still on the market. I think it is being sold as extensively as anybody can sell incubators nowadays. The catalog shown me indicates a Petersime commercial incubator. It is from the regular Petersime catalog. Counsel for defendants then offered the Petersime catalog as Defendants' Exhibit No. 28, for identification. It indicates their current commercial form. As to how this compares with the incubator that was in the litigation of Smith vs. Petersime, there are a number of new models and new improvements. This particular one [fol. 248] shown here, the hatching compartment has been changed to the bottom, and there are different sizes. It is a very much improved machine, and the hatching is in the bottom now instead of on the top. Aside from that, it is quite the same. They have put in certain partitions in places that did not exist at that time. I think it is substantially the same machine as in the litigation.

Looking at the construction which is the third from the left-hand side on Defendants' Exhibit 19, I am familiar with the Bolling Constructions that have been put out in more recent years, but there are none of these that represent the device that was before the Court in Indiana, in the suit of Smith and Buckeye v. Boling. I have read the record to verify that fact. That is my belief. There were no drawings or no physical exhibits introduced before the Court.

Referring to the last illustration on the right hand, on Defendants' Exhibit 19, I am familiar with the defendants' construction in the case of Smith v. Hillpot in the Third Circuit. This was the construction of an experimental machine; it illustrates the construction of an experimental machine that Mr. Hillpot had. There were other constructions. This particular machine illustrated in Exhibit 19, is identified as an experimental machine that he had not used for more than experimental purposes. That was one of the machines in issue in that suit. It was an experimental machine that he had there. I am not sure that he ever had it in full operation. He had trays on the sides of the corridor, and in the top of the corridor he had three fans arranged that would circulate the air, pull the air off the heating pipes

[fol. 249] above and circulate it down into the cabinet; but, so far as I know, this machine was not used for anything other than experimental purposes.

I am familiar with the defendant's construction, Hillpot construction, in that suit. I can make a sketch to illustrate that construction. In the Hillpot construction they had a cabinet about ten or twelve trays high, as I remember it; there were three trays in each stack, ten or twelve trays high. The trays were approximately square, and he had a central passageway or central corridor, but it was not a passageway that could be entered without taking the trays out, and in the side wall there was a fan set as shown, so that the edge of the fan came right with the wall of the incubator; that is, the tips of the fan blades were right at the wall of the incubator. This fan drew heated air from the compartment that was directly above the incubator, that had an ordinary house-heating radiator in it, and the air was drawn in over that fan, or over that radiator, and down a tunnel like or conduit to the point of the fan, and was forced out into the chamber. There was no curtain there at all. There was no return. The air escaped through various exhaust openings. The fan was mounted in the side wall in that manner. I mark the sketch with the letter "A" to indicate cabinet; the letter "B", the stacks of egg trays; the letter "C", the corridor; the letter "D", the fan; the letter "E", the conduit from the radiator leading to the fan. This was a vertical conduit that came over the radiator, overhead; that is "E". Thereupon counsel for defendants offered in evidence the sketch of Hill- [fol. 250] pot's construction, made by Mr. Taggart, and it was marked Defendants' Exhibit No. 29 for Identification.

The Witness: In the construction of Hillpot that has been illustrated on this Exhibit 19, at the right hand. Hillpot had this one experimental device that had a fan at the top. The heating pipes were just over the top of the fan.

I testified in the Hillpot case. There was there an exhibit in the case, that showed a construction such as Exhibit 19, in the extreme right hand column, which the defendant testified was his experimental machine and had not been used further than experimental purposes. There was a structure of this kind.

Referring to Exhibit 14, the James machine, I stated this morning that the air started with the air-moving instrumentality at the top—and then moved down through the side passageways where it entered a point below the egg compartment, and at that point met the cold air, and the air mixer, and then the air moved on upwardly, through the eggs, after having been engaged and mixed by the air mixer. The fan at the top is the impelling force that moves the air downward, and, of course air enters at the bottom with considerable force, and there is also the suction action of the fan to draw it up, so that the fan moves it in repeated cycles over and over.

Q. And whatever currents, if any, were broken up by the air mixer at the bottom, there would be no other fan or air mixer above that air mixer for creating any additional currents inside of the egg cabinet; that is correct, is it not?

A. Any that might be there would be very slight. The [fol. 251] motion of the fan, the pulling action, the forcing, which ever you want to take is what moves that up through there in a continuous stream.

Q. Now, Mr. Taggart, just one more question before we adjourn. You referred, in your direct examination, I think, yesterday, in response to a question of Mr. Ely, as to speed of air of some 11,000 feet a minute, which it was claimed I had referred to in my opening statement, either this time, or in the preliminary injunction motion.

Mr. Ely: The motion.

Q. Now, as to that 11,000 feet a minute proposition, did you understand me to refer to cubic feet or linear feet?

A. In your opening statement as it is recorded by the stenographer—I mean, in your statement before the Court at the motion for preliminary injunction, you were talking of velocity, and stated it was moving at 11,000 feet per minute, on two different occasions.

Q. Now, in that action, is it not a fact that, in the connection I was then using it, that Judge Westenhaver, in referring to the plaintiff's machine said this, and I will quote it as a basis for my question to you, to clear up this matter so it will not confuse the Court.

"The shaft is driven at a moderate rate of speed," referring to the defendant's construction first, "so that the

outward tips of the revolving boards move only at the rate of 2,000 feet a minute, whereas the outward tips of the fan blades of plaintiff's 18-inch fans revolve at the rate of more than 11,000 feet a minute."

Now, is it not a fact that if Judge Westenhaver was cor-
[fol. 252] rect, whom I was following, with your fan tips traveling at 11,000 feet a minute, that the air engaged by those tips would have a force applied to them equal to that speed of 11,000 feet? Whether it ever accomplished that would depend upon the slippage upon the face of the fan, and other matters. In other words, the linear speed referred to in the 11,000 feet was the fan tip speed and not the speed of course, the air could get up to, as that would be an absurdity, as it could not get that high, is that not correct?

A. That is not the correct statement you made here before the Court.

Q. Is not that a correct statement now?

A. Judge Westenhaver stated that the tips of the fan blades were moving at 11,000 feet, but you stated that the air was blown down from the fans at a speed of 11,000 feet per minute and continued at that velocity up to the egg chambers.

Q. Now, we will let the Court determine that later.

The Court: I believe that Counsel, in his subsequent statement, can clear that matter up.

Q. The second thing, Mr. Taggart, is this: in your machine, such as we saw at Grand Rapids, at the Incubator Convention this fall, when Dr. Greene who sits here, and myself, were present there talking to you, is it not a fact you advised Dr. Greene that your four fans in that incubator were timed at such speed as to deliver about 2,700 cu. ft. of air a minute per fan? If that is not correct, please
[fol. 253] correct me, so we can get the right figure?

A. No, the particular fans that were out there are rated at 2,100 cu. ft. per minute.

Q. Well, now, let us put it this way: if we want to find out how many cubic feet of air are delivered in a Smith incubator we take the reading of the fan such as you mentioned in your direct examination, which, in this case, you say was 2,100?

A. I think that is correct, yes, sir.

Q. Multiply that by the number of fans?

A. Yes, sir.

Q. So if you have five fans at 2,100 cu. ft. the total volume of air delivered would be five times 2,100, is that correct?

A. Yes, sir.

Q. And then we would get a total result which would approximate, say, a figure from 6,500 up to 11,000 cu. ft., per minute, is that correct?

A. Yes, sir.

Mr. Toulmin, Jr.: All right, that is all.

Redirect examination.

By Mr. Ely:

The fan delivered 2,100 cu. ft.

And we had two different machines on exhibit there, and they both had the same type of fans. One of them was a 39,000 egg machine having three fans, and one of them was a 65,000 egg machine, having five fans.

Our 65,000 egg machine is bigger than this machine that we saw down here at the warehouse. It is hardly correct to say that we had larger fans and more fan capacity than the machine down here. Since last July, we have been equipping some of our latest machines with this type of fan, a new type of fan. It is a split phase motor and is thought better for the general public, in general appli- [fol. 254] cations, that is. There are some places where the current is not proper, and this type of motor stands up better than the induction type of motor which we used to use.

We have different types of machines, but we also equip them with different motors, under different conditions. The type fans we have down here and the type fans on which I made my calculations were the type that were throwing 1,500 cu. ft. per minute. That is a standard machine which we have put on the market. We sold several hundred of them. It is only since last July that we have been putting this other fan in our incubators.

We have been increasing our fan capacity more recently. The first fans we had, of that kind, as a matter of fact, were shipped by the Robinson-Meyers Company, direct to the Exhibit. They did not come to our factory. As to our fan capacity, in our early history, the Smith incubator was

approximately the same. We have used several different types of fans. We have used perhaps five times as many as the type that is shown here as we have of any other variety. Two fans were shown in that machine of the patent. They are smaller, proportionately smaller, than the fans we use today.

Q. With regard to Exhibit No. 27 on the egg arrangements, Mr. Toulmin called attention to the fact that in these James Way arrangements, the blue or the endothermic eggs were at the bottom of the column, whereas he called attention to the fact that in these various other arrangements that you have shown, the exothermic eggs were [fol. 255] at the bottom of the column. Now, as a matter of fact, in these particular arrangements which you have chosen to show, in the first group it is a three and one-half day egg, in the second group it is a four and one-half day egg, in the third group it is a seven day egg, and in the fourth group it is a ten and one-quarter day egg. Now, those eggs are not moved, are they; that is, they are not shifted to any position in the column?

A. No, sir.

Q. So that those eggs will be exothermic eggs at some other time in the process, will they not?

A. Yes, sir.

It makes no difference, in a matter of heat transfer, whether these eggs that happen to be in the bottom layer are in their endothermic or in their exothermic stages. They would eventually become exothermic if you allow them to remain there another week. You could show an arrangement a week later where those eggs would be exothermic eggs. The James Way uses the heat that has been given off by eggs in the later stages of incubation, in the hatching process. The James Way does not use all of the heat of the exothermic eggs in his process. He does not take full advantage of the possibilities that exist there. He has used the process perhaps less efficiently than Smith. He still uses the heat of the exothermic eggs in bringing the endothermic eggs up to temperature. Although he does not use the entire volume of heat for that purpose. As to what effect the moisture content of the air in the incubator has with respect to the drying of the eggs and the conservation of the moisture within the egg, the more humid the [fol. 256] air is in the incubator, the less moisture will

evaporate from the egg itself, and the higher we keep the humidity in the machine, the less evaporation we have from the eggs. The matter of the control of evaporation of water within the eggs is not a factor in securing proper chicks only during the last three days of the incubation it is necesary to control it at all points.

It is necessary to control the evaporation of the water in the egg at all stages, because the size of the chick is determined—if you keep your high humidity and keep your temperature at the right point, you will have your chicks growing in a regular way. If, at an early stage, you do not have proper humidity and proper temperature, you can do very severe damage at that time. In fact, most of the cripples and deformed chicks, and so forth, it is the consensus of opinion that that is caused during the first week of incubation rather than the last week, and the humidity, the evaporation of the egg, and the temperature effect it then just the same as they do later. It is the general understanding that, after the eggs get to the point where they no longer need to be turned, that they will stand a lot more grief and rougher handling than they will at the earlier periods.

This matter of evaporation, in order to secure the best incubation results, should be an evenly distributed evaporation. I don't believe that the matter of conservation of moisture is any more important at any one time in the process than it is at another. This Smith process is a going process, not static in the sense of fixed. It has been subject to improvement right along.

[fol. 257] We have been learning about the incubation of chicks right straight along, it is a continuous study. We are continually improving upon this basic process. The basic process covered or disclosed in the Smith patent had not been changed. We have found, perhaps, improved ways of operating and improved devices for our machines. We have not changed the principle of this air circulation and heat transfer.

It is necessary in a going process to find improvement as you go along. If it is a live thing, it keeps being improved.

In a number of cases operators of the Smith incubator have carried on the practice of hatching the eggs up to the 18th day in the Smith machine, and then carrying on the remaining three days in some other machine. At Shenan-

doah, Iowa, there is a Smith operated there in which they take the eggs out on the 18th and 19th day and put them in another machine for hatching. There is another one along the Ohio River in southern Indiana—I cannot think of the name. I can point it out on the map, I cannot tell the name. There are operators who do that very thing with the Smith machine. As to the Smith machine adapting itself to that arrangement, there is no reason why they cannot do it.

Q. And in the Smith machine, do you know of any instances where they put the eggs in other positions than in the racks, or in the exact order in which it is described in this patent?

A. They sometimes get them in there wrong, but they have to move down—the chain arrangement compels them to move down progressively. Sometimes they will set as [fol. 258] many as four or five trays in one column at a given time, and then there has been Smith machines on the market—I will not say there were commercially sold, but they have been put out and used, as many as 15 or 16 of them, that I know of, in which there were racks, like Buckeye, and it was the custom in many of those not to move the machines—not to move the trays at all from the time they were set until they went into the hatching compartment.

I have known of a number of fresh trays to be put right on top of the hatching rack, and at certain periods placed in the hatching racks, in and I have known a Buckeye machine particularly, in which there would be many trays put in the corridor in different stages of incubation. They would change this order of arrangement of eggs with respect to the circuit of air.

Referring to Defendant's Exhibit No. 19, in the Petersime machine, the egg trays were in what is called a drum; the trays placed in the drum. The trays were different sizes so they would fit the drum. The thing which beats up the air had a central shaft which supported the trays, and on the shaft at both ends of the drum there was an arm pivoted at the center, and on the end of this arm there were two blades, or two pieces or strips of wood about one and five-eighths inches wide, if I remember correctly, that reach from one end of the drum to the other, and these were caused to rotate about the drum, somewhat similar to the reel on a grain binder.

It was held that there was not any definite movement of [fol. 259] the air in current form through the machine in the operation of the Petersime machine. The decision of the Court was that there was nothing in that machine to force the currents to move in any particular path. That thing that revolved around beat up the air and caused general agitation.

I recall that present Counsel for the defendant were Counsel in that case. I heard arguments in that case. I did not hear the argument made by defendant in that case that the Petersime machine had air moving in current form. They said that there was no current moving in there, that the air was simply stirred and beat up, and that it was decidedly distinct from the current form movement.

With respect to the Blum construction, illustrated in that second sketch, and with respect to those devices for agitating the air in that case being large boards, like paddles, as I remember, the boards were about four and one-half inches wide, or five inches wide. They were placed just flat on the shaft. That third device was not in the Blum case as an exhibit of the incubator in suit, at all, as I remember it. The incubator in suit the thing that was alleged to be an infringement, had perfectly flat blades, so that the face of the blade was parallel to the shaft. As it rotated on the axis the air was churned and beat up continuously. The Counsel took every oportunity to stress that there was no definite air movement in there, that it was simply an agitation or a mixing of the air. As to there being any recirculation of the air in definite closed cycles in that machine, there was none so established. Present Counsel for de- [fol. 260] fendant was counsel for Blum in that case, and I heard the argument in that case.

With respect to these drawings, illustrated here as Smith vs. Boling, in that suit there was no drawings of this description in the record at all. These drawings were taken from a brief that was submitted by Counsel, and the drawings were part of the illustrations that they used in a brief of a later case. They were argumentative drawings used for the purpose of argument by Counsel for the plaintiff. They were put in by Counsel for the plaintiff to illustrate some various constructions.

Mr. Ely: There was no opinion at all. The Court simply dismissed the bill for want of equity.

Mr. Toulmin, Jr.: The Indiana Court is accustomed to just give a decision without any opinion, in that court, and the entry is usually signed by the clerk, in ordinary custom.

The Court: Was that in the Circuit Court of Appeals?

Mr. Toulmin, Jr.: It did not go up to the Court of Appeals. The plaintiff, Buckeye-Smith, did not take any appeal in that case.

Mr. Ely.: I will explain that, your Honor while we are on that point, I might as well clear it up. Here is a quotation from page 116 of the Petersime record, which will show you just what that is, and this is the brief filed by plaintiff's counsel.

[fol. 261] The Court: On the appeal?

Mr. Ely: Yes, it is in the record.

The Court: Well, there was an appeal? I thought you said there was no decision.

The Witness: That was an entirely different case.

Mr. Ely: This was a brief filed by Counsel, not an opinion, your Honor.

The Court: I understand that, in the District Court, but this says "Pages 105 to 117, Circuit Court of Appeals record".

Mr. Ely: Well, the Circuit Court of Appeals record referred to is Circuit Court of Appeals record in the Petersime case where the brief filed by Counsel for the plaintiff was filed as an exhibit.

The Court: Yes, I see.

Mr. Ely: Now, in the brief—and I will show you where those drawings come from—in the brief for the plaintiff it says, "We attach here three sketches, and the one marked No. 1 must be conceded to be within the terms or spirit of Claims 1, 2, 3, 5".

The Court: Well, there is no proof that these particular drawings here were the drawings which the Court passed on in that case.

Mr. Ely: I object to this going in, your Honor, under the heading "Defendant's construction held not to infringe the Smith patent", and with this at the bottom of it, without explaining just what those drawings are.

The Court: I am inclined to think that that entirely [fol. 262] should be stricken out upon your own showing

here; it is only an illustrative drawing that was used in the case.

Mr. Toulmin, Jr.: May I be heard, your Honor?

The Court: Surely.

Mr. Toulmin, Jr.: Here is our situation that we have here: we have produced the record of testimony in the Bolling case, in Indiana. In that case there were no drawings that were filed that we could ever find. We made these three drawings, you see, in Smith vs. Boling, United States District Court of Indiana, and we were confronted with the same problem we had in the Petersime case; to illustrate what was done in the Boling case, we made up those drawings based upon the record as we interpreted the witnesses' testimony of their understanding of the construction in the Boling case. We had these three drawings in our Petersime brief; then when we came to this Court and tried to give an illustration of what happened, I called attention to the fact that these drawings were not from Smith vs. Boling as official drawings, because I did not want the Court to believe that, but I called attention to the fact that they did occur in the contested case between Smith and Buckeye and Petersime. No objection was raised then as to their accuracy. We have that record, your Honor, and it is that record—I ask you to reserve your decision for that purpose. Their probative value [fol. 263] would depend on how accurate they are, if you want to go into that case.

Mr. Ely: I wish to call your Honor's attention simply to the descriptive matter where the three drawings were put in by plaintiff's counsel in that case as illustrating, first, the construction which was covered in the patent and then their arguments, if this was patented construction, that ought to be included.

The Witness: These three drawings do not show the construction of the Boling incubator, which was in that Indiana case as described by the witnesses. There was no drawings or exhibits in that case. The Bolling construction was later held to be an infringement in that case in Idaho. That Boling construction was similar—at least the arrangement of eggs and the fans were similar to that shown in Exhibit No. 27.

(The Plaintiff thereupon rested.)

ARTHUR M. GREENE, JR., called as a witness on behalf of Defendants and sworn, testified as follows:

Direct examination.

By Mr. Toulmin, Jr.:

Q. Your occupation, Dr. Greene?

A. I am an educator and mechanical engineer.

Q. Will you please state what is your present immediate [fol. 264] employment?

A. I am at present the dean of the School of Engineering, Princeton University, and professor of Mechanical Engineering.

Q. And how long have you been there?

A. I am now half through my twelfth year at Princeton. I preceded that by 15 years as professor of Mechanical Engineering at the Rensselaer Polytechnic Institute, coming to the Institute from the University of Missouri, at which place I was Professor of Mechanical Engineering; and during my last five years there I was Junior Dean of the School of Engineering.

Q. And your position at the second institution, what was that?

A. At the second institution?

Q. Yes, after Missouri.

A. At Troy, I was professor of Mechanical Engineering; at that institution I was called by President Ricketts to inaugurate a new department of Mechanical Engineering to supplement their Civil Engineering course, and also I have done the same thing at Princeton, organizing a school out of the department of Civil Engineering and Electrical Engineering to include my own specialty of Chemical Engineering and Mining Engineering.

My original training was done at the Uiversity of Pennsylvania, at which place I graduated in 1893 with the degree of B. S., and in 1894 I received the degree of M. E.

In 1916 the University of Pennsylvania honored me with their honorary degree of Doctor of Science; and on leaving Rensselaer Polytechnic Institute, they also honored me with the degree of Doctor of Engineering.

Q. In the course of your professional work, have you had anything to do with that branch of engineering known [fol. 265] as Heating and Ventilating?

A. I have had much to do.

Q. Have you written any books on that subject?

A. I have written a book on The Elements of Heating and Ventilating, and another book on The Elements of Refrigeration. I have taught these subjects for 20 or 25 years, and I have had practical experience in the design, installation and operation of such plants. I have had some experience in my early professional life with the Committee of Science and Arts of the Franklin Institute, of which I am a member, in dealing with meritorious inventions, examining patents, examining the literature of the time, to find out whether these were real improvements, and then, in addition to that kind of work, I have served as an expert in a number of patent cases, some of them dealing with this art of heating and ventilation.

Q. Have you made any particular study of the art of incubation, with particular reference to heating and ventilating problems?

A. Yes, indeed.

Q. Will you tell the Court to what extent you have investigated this question, with special reference to this particular suit, so he will know your qualifications in that subject?

A. Of course, your Honor, in my own work, originally, before this suit started, I had to study the problems of air-handling and air-conditioning, and I also had to teach the subjects, and then, in connection with this suit, I read much of the history of the industry, and I looked into the methods of hatching. Then I studied a number of patents, and in addition to that I have visited several of these large Smith incubators, in one of which, at Frenchtown, New [fol. 266] Jersey, I made some tests on a 50,000 unit incubator, such as we saw in the building—it was not of this late type, but it was of that capacity; and then I visited a plant in Dayton, Ohio, and I visited a plant in Trenton, but was not able to see the machine in operation.

Then I have visited a number of the James way plants, the plants of the James Manufacturing Company, and have made certain tests on a unit with glass sides similar to that which Mr. Taggart has prepared for the Smith Company. I have made a number of calculations regarding heat transfer, both from the box itself and for the amount

of humidity which must be provided for by water—by the evaporation of water.

I have investigated Mr. Taggart's charts showing the amount of heat produced per day, and have reduced that to the form of heat per day per thousand eggs, in the average condition; and in addition to that, of course, I have studied the Smith Patent very carefully, as well as certain prior art patents which bear on this subject.

Q. And have you had occasion to read some of the records of the Court proceedings on the Smith Patent?

A. Yes, I have read the file wrapper of this particular patent, and in the preparation of my affidavits which I prepared for this Court last summer, I read very carefully the decisions in the exhibit prepared by the plaintiff in this case.

Q. Now, will you state to the Court, briefly, but as clearly as you can, your understanding of the construction and method of operation of this patent in suit, which is the foundation for the later questions I am going to ask.

A. Your Honor, I realize that you have gone over this [fol. 267] patent of Smith's 1,262,860, and on account of certain details which I feel were not stressed properly, I may tire you by going over them again, but I do want to call your attention to a number of what I believe are very important things.

In the first place, Mr. Smith, as he states on page 1, line 8, prepared this improved apparatus and method, which was "particularly designed for extensive operations wherein a chamber of large dimensions is adapted to contain thousands of eggs in separate trays arranged in tiers and the method of heating is such that the heated air is adapted to the eggs in various stages of incubation. There is a forced circulation of hot air through the chamber which is adapted preferably to maintain all eggs at temperatures between 100 degrees and 105 degrees Fahrenheit approximately and this improved system contemplates that fresh eggs will be placed in a horizontal plane, preferably by means of trays supported in horizontal planes, and after the eggs have been subject to the circulation of hot air for a predetermined time (the air circulating largely around the eggs) they will be placed in a tilted or inclined position in a different location but still subject to the same column of air and at this period of incubation they will be tilted

in different planes at regular intervals during the time they remain in this latter position, and after they have remained for a predetermined time they will be again moved to a different position with reference to the forced circulation of hot air and so placed therein that the air will tend to keep the eggs below 105 degrees temperature, and in this last named position the air will be forced to pass be- [fol. 268] tween the different eggs and will in effect act as a cool medium for the eggs."

I want to stop there, Sir. The patentee discloses here a large room which, on Page 1 and at Line 67, he says is approximately nine feet high, eight to ten feet wide, and of any desired length; and into this room he brings the eggs which are to be arranged in staged incubation, as you have already been told.

In this particular part which I have read, I would like to call your attention to three positions of the eggs which Mr. Smith definitely describes here, and again in two other places. He says he first puts the eggs into the horizontal trays which do not tilt. Then he puts them into a second place where there is tilting, and he states that the air circulates largely around the eggs. I want to have you note the expression that he uses here; that is, in the upper tray, and then in the next six trays, he has eggs in which the air passes largely around them.

You will notice that there is a large clearance space 27 through which much of the air may pass, and that 27 is continued up between the stationary eggs.

Now, after specifying this, he then comes in with this which I have just quoted, the last part, and he says there he will put the eggs in a place where there is forced circulation, and as was noted this afternoon by Mr. Taggart, that strap 28—that is the lower 28 in this case, because the upper one is the outlet—that strap prevents the air from going up through that lane and causes a high velocity around the eggs.

So Mr. Smith has definitely pointed out, so far, three distinct positions, the stationary trays, six movable trays or [fol. 269] tilting trays, and finally three others which have a definite higher speed, as he says, to have the heat removed from these by a high velocity.

Now, I think it was said this afternoon that velocity did not play any part in this. Velocity plays a considerable

part, as I think the Court pertinently asked with the idea that it did play a part. It does play a part, your Honor. The higher the speed, the smaller the air film on the eggs, which prevents the heat from coming out or going in, and also the higher the speed, the greater quantity of air passing by, consequently less change in the air. So you are perfectly right in asking whether that speed did not affect heat transfer and temperature. It does, and Smith recognizes it.

Now, he goes on, next, beginning at line 48: "It is manifest that the temperature will remain practically the same throughout the column of eggs, but the air is impelled with sufficient velocity to carry the heat away from the eggs which happen to be in the advanced stage of incubation."

Going a little further, while we are still talking of these three positions, plus the lower one, on page 1, in the next column, beginning at line 81, he then refers to the tilting racks 10, and he then says, beginning at line 84—I think I will start at line 81:

"A series of stationary racks 12 are also arranged beneath the tilting racks 10, and all of said racks are of open construction and of the same size to permit interchange of the shallow trays 13 from the eggs to be hatched."

I would like to call your attention——

[fol. 270] Q. "For the eggs to be hatched," Dr. Greene.

A. I beg your pardon.

Q. You said "from"; you mean "for", do you not? You mean "for", do you not, after "trays 13"? You said "from".

A. "For the eggs to be hatched." "These trays are—"

By the Court:

Q. Where do you find 12 on the Diagram 3?

A. Right on Fig. 3, right in the middle of the wood tinting, which represents the upright which support the brackets for the stationary trays.

Q. I am looking for 12. Where is that? It is not on mine. It is on Fig. 2 at the bottom.

A. I beg your pardon.

Q. It says Fig. 12; that is way down at the bottom?

A. Yes, and we are talking about these three trays, 13, which rest on those, but right above, there was reference to

the first three positions. We are now dealing with the fourth position.

The Court: All right, go ahead.

The Witness: Continuing on line 87:

"These trays are provided with open mesh bottoms 14 upon which the smaller ends of the eggs rest in close and solid formation, and each tray of eggs occupies the upper rack 9 for the first three days, and is then transferred to a place in the upper end of the tilting rack 10. During the next 15 days the trays in the tilting rack are shifted from higher to lower planes therein and tilted at frequent intervals to stand in oppositely-inclined positions. The tilting of the eggs is preferably arranged to put the eggs substantially on their sides. When the eggs in the lowermost [fol. 271] trays in the tilting racks 10 are about ready to hatch each tray is transferred to the stationary rack 12 where the chicks may be removed as occasion requires."

In the first column, which I have read a few moments ago, the patentee speaks of the early stages of incubation, but here he says that when they are about ready to hatch—which he means separate from the other, because that is a distinct period—he moves them down to the lower place.

Now, in order to handle such a large number of eggs without cooling off the box and without shutting down the fan, this patent discloses—I can only use the patent disclosure, your Honor. What Mr. Smith had in mind, I don't know, what he really meant, but I know what he says here. He provides a place called a corridor, No. 5 on Fig. 1.

Now, that corridor is not a mere passage for the travel of air, or electric conduits, or water. It is a corridor in the true sense of the word. I realize perfectly that, although a dictionary says that a corridor is a passage in a building, that Mr. Smith would have the right to call anything a corridor that he might want to; but whenever he uses the word "corridor", it must be what he had in mind, and here he distinctly calls No. 5 a corridor, and when he refers to "corridor" elsewhere, this is what he has in mind.

On page 2 he again describes this arrangement of eggs. He seems to have that in mind a number of times, and beginning at line 28, he states:

[fol. 272] "As explained later, the trays near the bottom are preferably arranged—"speaking of the trays arranged

in vertical order—"As explained later the trays near the bottom are preferably arranged so that the air is forced to pass between the eggs in each tray thereby cooling or holding the temperature of those eggs down. Thence the air passes into spaces above the lower series of trays until it reaches the distributing space 21 above the fan." That is the space at the top, looking at Fig. 1, at the top of the corridor in which the fan is located.

Now, at the bottom of this first column on page 2, the patent states that:

"In Fig. 3 only a single curtain 3 is shown in place, the curtain or curtains at the right being entirely removed to disclose the racks and trays in full lines, and it will be also noted that the vertical spaces 27 between the adjacent tilting racks 10 are closed at their lower ends by flexible strips of fabric which are attached to and extend upward at each side of each rack so as to compel the air to circulate through the mesh bottom and around and about each egg as heretofore referred to, and as the eggs further advanced in incubation are contained in these lower trays and as the danger is that the temperature will rise in these eggs to a point injurious to incubation the improved method disclosed herein permits the circulating air to act as a medium to prevent the overheating at this stage of incubation and this is accomplished by promoting an induced draft within the lower trays."

Now, we have there an expression of induced draft in these lower trays, as Mr. Taggart has said, and as the [fol. 273] patent states. This is a forced circulation or forced draft machine. In most of our work, we speak of forced draft where we are dealing with pressures above atmosphere. In boiler house work, particularly, we mount a fan on the boiler-room floor; we pump the air into our firebox beneath the grate to such an extent that it would support a water column of seven inches or six inches, and we speak of having a forced draft of four-inch pressure. Now, in order to remove the gases from our boiler, if we do not have a chimney, we put another fan on the other side and suck the gases out from the boiler, producing a low pressure within, producing a pressure on the entering side of that fan below the pressure on the exit side, and that we call an induced draft fan.

Now, in this particular case—and this is very important, your Honor; if you will look at Fig. 1 you will see that the

outlet 28 discharges into the atmosphere. The inlet, directly—well, it is No. 3 on the machine; it is directly over the No. 24—is also open to the atmosphere. These two pressures are the same.

Now, the fan, which we will talk about later, produces pressure on the lower side and produces a suction or induction on the upper side, sucking the air in through the regulated opening 24, as the pressure within 21 is sub-atmospheric, it is open to the atmosphere above, and the atmosphere is not entering, must be at a pressure above the atmosphere, and therefore this fan is producing pressure, we will say, slightly above—not very much above—the atmosphere at the top; but as we go down in this channel, the resistance means that we must carry more pressure below, [fol. 274] and then we get up to the fan itself, we have the greatest pressure.

So that this word "induced draft" in the egg chamber, to me, cannot be explained by the ordinary term "induced draft", because the pressure is above atmosphere.

Now, sometimes, when air passes in an orifice which is converging, it produces a place of low pressure, due to that high velocity, and air is sucked in. It may be that Smith had that in mind, or it may be that he means merely that the air is being induced into this place, or inducted, going back to his derivation of that word, and used it there. Otherwise, I cannot understand what he means by "induced draft". He does not say, up in 22, but he said "and this is accomplished by producing an induced draft within the lower trays". That is the place where the pressure is high. The pressure is near atmospheric; or if someone would say it would be below atmospheric, which it could not be at the top, it might be an induced draft, but there is no induced draft in the lower trays.

By Mr. Toulmin, Jr.:

Q. At that point, Dr. Greene, is there any induced draft in the egg column?

A. I beg your pardon.

Q. At that point is there any induced draft in the egg column?

A. At any point?

Q. Yes, at any point?

A. No, sir, there is not.

Q. How would the air get out of the opening 28 unless there was pressure in the egg column?

A. There is no way that I understand, because if there were not pressure atmosphere, and we have such a large [fol. 275] opening as these openings in the actual machine are, the air would seek its way in and not come in through the regulated opening 24 and you would defeat the object of the machine. The pressure must be—and we have on Mr. Taggart's chart, if I recall rightly, a velocity of somewhere near 116 feet a minute through these openings 28; and, of course, that velocity is dependent entirely, as Mr. Taggart properly said, on the amount of opening in the valves 24. That is, if you close the valves 24, you practically have no discharge. You have no discharge. You open it a little bit and you do get a discharge; and open it more and you get more.

Now, under the condition during the test which Mr. Taggart made, of which I know nothing, his results show that the velocity there, as I recall it, was in the neighborhood of 116 feet per minute, which means, of course, that air is leaving and the pressure should be super-atmospheric.

Now, if you had very high velocity, maybe five or six or seven hundred feet, since there is such a thing as the consumption of kinetic energy and potential energy being constant, a high velocity below 28 might cause a discharge with a low pressure. At that time, however, air would not flow over 22 into 21. I can definitely say, in my opinion, from the observation of this machine, that there is no subatmospheric pressure at the top of the egg chamber.

By the Court:

Q. What, then, is the conclusion to be drawn from your statement? Do you mean by that, that the air will not circulate around?

A. Oh, no, sir.

[fol. 276] Q. Into the chamber, 21?

A. No, sir, I do not. I say that, if there might be high velocity to send air out through 28, when the pressure below 28 is less than atmospheric, then such a condition would probably pull air from 21 over into the egg chamber.

Q. Well, then, you think the velocity is less than atmospheric there at the top of the tiers of eggs?

A. I think the velocity of the air at the top of the eggs, in the open space, above the stationary eggs, from Mr. Tag-

gart's figures, would be in the neighborhood of eighty or ninety feet a minute in that large space. Now, with a velocity of 116 feet going out, which is greater than the velocity below, there must be pressure pushed out, and from Mr. Taggart's figures, I will show your Honor that the velocity in that wide open space, with no obstructions, will be about eighty feet a minute.

Q. Where will the air go then?

A. It will be sucked over into 21. There is induced draft across the opening above 22. There is a distinct induced draft there, because the fan produces a sub-atmospheric pressure in the space 21, which does two things; it sucks the fresh air through the opening 24 and brings air over for recirculation from the top of the egg chamber.

Q. Well, do I draw the conclusion from your answer that air is not proceeding at the speed that Mr. Taggart testifies as it goes through these egg chambers?

A. I will compute for your Honor by a very simple method, using Mr. Taggart's data, that the velocity, with no eggs or no obstruction at all in the egg chamber, should be more than sixty feet. It would be in the order of eighty feet a minute, with nothing in there.

[fol. 277] Q. Well, would it vary at different points?

A. Yes, it might vary; that is very true, sir. So, if we have one 60, and another 80, and another 100, that is perfectly possible, but as soon as you put the eggs in there to occupy 80 per cent of that space, and leave only 20 per cent for the air to pass through—I have not computed my figures, so I am just using a hypothetical condition—the velocities must be in the order of 350 feet, if there are eggs in there; and I can give you the data from which that conclusion would be drawn in a very simple way.

Q. Well, is it your argument that there is no forced circulation?

A. Oh, no, sir. There is forced circulation. I do not want to say there is not. There is forced circulation.

Q. I might draw that conclusion from your——

A. No. All I want you to understand—I am trying, your Honor, to bring out what Mr. Smith has taught in this patent. I am not trying to say that the patent does not mean what it says. It does; but I do not want you to get an incorrect conception.

Q. I thought you intended to mean that the description as given in the patent would not work?

A. No, sir. It will work, absolutely, as the patent says; it will work, absolutely, it will work.

Q. What would be the effect if the opening in 28 and the opening in 24 were the same size with the degree of velocity of the fan as it has been demonstrated?

A. If the opening 23—the combined areas 28 were equal to the area 24, I believe that there would be a—this is an absurd answer—there would be more than if we closed down 24. But let me put it another way: If the two areas are the same, then I think that the areas 28-28 would do the [fol. 278] controlling of the amount of fresh air brought into that machine.

Q. That is, the pressure——

A. The pressure and the amount of air which went out would control the amount which came in; but as soon as you begin to close 24, throttle it down, then you do stop air from going out 28, because no more can go out than that which has come in, as Mr. Taggart has properly said.

Q. All right.

My Mr. Toulmin, Jr.:

Q. Go ahead, Dr. Greene.

A. Your Honor, I would just like to say that from line 79 down to line 96, Mr. Smith has again spoken of these four different positions. That is, there are really three different places in this specification and one extra little one for a particular place where he harps on the stationary place at the top; then a distance of six trays which are in the tilting position, to exercise the embryos, as Mr. Taggart said, and as the Doctor said this afternoon, which was practically the same thing; then three lower ones, through which he wants to force the air for the purpose of getting the heat out quickly, and then the bottom one, which he says, in line 94—he states it this way: "and thereafter placing the eggs into the final position of the hatching operation."

By the Court:

Q. Well, how does he force air through those two lower trays, if the air comes down and goes beneath the curtain from above the three trays? What do you mean by that?

[fol. 279] A. If you will notice, your Honor, the present embodiment is not the Smith patent——

Q. Well, I am speaking about this description here.

A. Now, in this description, he allows the air to enter the stationary hatching trays at the bottom through openings right above their front member. If you look at the three trays 13, beneath the canvas, you will see, right under the circular finger pull, an open space. Air can enter there and go rushing into that top layer. Then the air can also go into the next one, and to the bottom one.

Now, you will notice that there is much more space for the admission of air under the bottom tray, because that tray only gets its own supply, but the second tray from the bottom gets that which went through the first, plus the fresh air which has not been heated up, and then the top one does the same thing.

Now, the commercial embodiment differs from the teaching of this patent in a number of ways; and it is the patent, as I understand it, we are discussing, and not that commercial embodiment. After air rushes by these lower hottest eggs, removing heat, it then has to run by three more which are still also in this hotter period, and then finally it can escape out into the part 27; and, of course, some goes through the egg trays, too, and also through the top trays, which are in the first stages; and in this, at line 85 which is in this last group, breaking into the sentence, he says, as follows:

"and held in a horizontal plane until they reach a predetermined stage of incubation and then put at a different level."

[fol. 280] That is, he speaks of the period of incubation and the last thing he talks of—whether the trade does or whether the circulars do—Smith definitely here speaks of a hatching period as a distinct entity which he seems to have known about.

Now, I would like to call attention to the fact that the opening 28, Fig. 1 I am referring to—is in the egg chamber. It is not in the suction chamber of the fan, nor is it in the corridor; and Smith, where he speaks of it, speaks of the "restricted openings of sufficient capacity for the

escape of foul air in this closed chamber." The exact words are, without any punctuation in between, "A method of hatching a plurality of eggs by arranging them at different levels in a closed chamber having restricted openings."

That is, the closed chamber, as he shows in his picture and as he actually talks about, is attached to this egg chamber and not somewhere else in the system. It is not an opening to merely get air out; it is an opening which has to be in this position to operate this machine as Smith wants it operated, and there is no question about its operating just as he says it should.

Now, the controlling means, as has been explained to you this evening by me, and also by Mr. Taggart, is not the size of this opening 28, but the size of the damper 24, and so small is the inlet arranged at times with such a device as is shown over on the exhibit of the plaintiff, that when I visited this large plant of 700,000 eggs capacity—fourteen of these fifty thousand egg machines of Smith were in this plant—the damper was closed off so that I could not measure any inlet of air at all. That is, I must have struck the [fol. 281] place at the period when they wanted to raise the humidity high and they proceeded to move the little damper over that closed off all the inlet. My anemometer would not move. So that this restricted opening which Mr. Smith calls for is not the thing which controls his amount of air, and therefore the patent is not responsive to the claim. That is, he calls for something and he does not get it by the means which he calls for; but whether it does the controlling or not, he says that this outlet opening must be in the egg chamber, and he so calls for it.

Now, I would also like to call attention to the fact that the door 8, which is indicated in Fig. 3 on the second sheet at the left, is large enough for a man to enter, and you, yourself, your Honor, were in such an incubator hatcher and noticed that this door was large. The width of the aisle in this machine is about three feet and one half, and the curtain which comes down forms the egg chamber, which is about three feet deep. The egg chamber at the other side is another three feet, and, of course, we must realize, in looking at this Fig. 3, that the curtain, when placed down in front of the lower trays, or the upper ones, too, and held there by pressure of the air in this central cham-

ber, it is at higher pressure than the egg chamber, as it must be, of course, because as you go from the fan down, the pressure is getting less and less and less; or if you go in the reverse direction, the pressure is getting higher. The pressure back at the reservoir is always greater than the pressure at the house. So that higher pressure in the corridors is the thing which holds that curtain against the egg [fol. 282] trays. It definitely shows that it is greater. Of course, it is required to be there in order to force the air in.

Now, I do think, your Honor, that cutting this curtain off above the egg trays does change the distribution of air. Why they did it, I do not know. Probably they found they did not have to have it go onto those hatching eggs to remove quite as much heat as they thought they would, but the Smith patent calls for the curtain by his disclosure, to come to this particular level.

Now, on page 2, at line 45—I think we had better begin at 43. The patent states:

"The outlets 28 for the release of foul air are made of such restricted capacity as to prevent the undue escape of moisture."

Now, what "the undue escape of moisture" is, I cannot find out in this patent. That is, I know that if you want to stop moisture going out, you stop it going out; and what "undue" is, he does not say. We have learned today from Mr. Taggart that, years ago, the undue loss of moisture was not the undue loss of moisture, since 1928, I think he said, where they wanted to raise the moisture in order to bathe the eggs with the proper humidity. It appears, whenever we are going to have a gas or a vapor leave one body and enter into another one, there is such a thing as vapor pressure on the outside, and to prevent the eggs from giving up moisture too rapidly, we must have water pressure, water vapor pressure, on the outside, to balance, to a certain extent that on the inside, to keep down the rapid evaporation.

Now, what was "undue", as I take it from Mr. Taggart's practice, what was "undue" when this patent was written, [fol. 283] is not undue today. We did not conserve as much then, and what this patent means—there is nothing in here that states it, except the words "undue loss of mois-

ture"; and, to my mind, the important thing about this is the control of carbon dioxide which comes off from the eggs, as well as this moisture, but he says nothing about that. He says only that he wants to cut down the undue loss of moisture.

Then he goes on to say, in the next sentence:

"It is possible to limit the openings and so conserve the moisture by reason of the vitalizing effect of the power-driven current upon the body of air within the chamber."

Now, that is another one that I do not understand, what "the vitalizing effect of the power-driven current" is. To me, an air current is an air current, and with fans, in a small space, you can create currents, whereas you can produce those same currents with a chimney of much greater height, and you would not do it if you did not want to do it for some other reason. If you wanted to get some current with a fan, you would, by the fan; and whether the current is produced by an ejector, a steam jet or by a fan, or by a chimney, if it has high velocity, the thing against which it rubs does not know what caused that velocity. All it feels is the velocity; and what "the vitalizing effect of the power-driven current upon the body of the air"—not upon the eggs, but "upon the body of the air within the chamber", means, I cannot understand; and I think, again, this patent is ambiguous and is not definite.

[fol. 284] By the Court:

Q. There would be moisture in the air and moisture coming from the eggs, would there not?

A. Yes, sir.

Q. You mean, by "conserve", to equalize the moisture, to make it what it ought to be?

A. No, I think it means to keep it from going out.

Q. Keep it from going out of the egg?

A. No, going out into the atmosphere, by closing the valve, as was done in the old so-called still air incubators, which I will not call still air, but the original one-tray incubators.

The patent calls, if you will look, please, at Fig. 3 on page 2, calls for a steam pipe up at 26, so that if the air which enters from the outside is not of the proper humidity, Smith

provides the addition of steam to give that moisture to the air; and when we come to discuss the James device of the defendant, you will see that there are other ways of getting this extra humidity.

I would like to call your attention, though, your Honor, to the fact that this steam brings heat with it into this box, and so, when we let the air out at 28, with it goes the heat and the moisture in that air, and the heat of that air above the temperature of the room—normally, the rooms would be 70 degrees, might be lower than that. The incubator has to be held at 99. The difference is 33 degrees, if we make the outside 69 and the other 99, and that heat to heat up the incoming air from 69 to 99, 30 degrees—I want to use it so we can get a round number—is equal to the heat leaving.

Then, also, all of this heat that you have to put in by the [fol. 285] steam to properly humidify the air, goes out.

I say, not only have you got to consider, in this patent, the amount of heat which these eggs give up, but you have also got to figure on the heat which the pipes 23 on Fig. 2—those are the steam pipes or hot water pipes which have to supply the necessary heat to the incoming air. Now, all of that heat which is supplied, goes out, because the eggs do not use up all of their heat that they produce, as I will show you from Mr. Taggart's drawing. So that, in this machine, we see that, in order to practice what Mr. Smith is teaching, you have absolutely got to put your eggs in a regular order, from the earliest eggs at the top to the hottest eggs at the bottom, because in that way, and only in that way, will the heat from the bottom go continuously through and touch those colder eggs. If you take the circuits of some of this air, you have to consider the heat which goes off there, which is more, much more than the heat which the eggs give.

So that only when you follow Smith's teachings in arranging these eggs not at any level—where he uses the word "level", he means definite level, 1, 2, 3, 4, of which I spoke—only when you put the eggs in that order can you say that the heat from these hot eggs will pass up onto the colder eggs.

For a moment, let us just reverse it, your Honor, and put the cold eggs at the bottom and the hot eggs at the top. Then the air will have to be brought in here possibly slightly

warmer, to give heat to these eggs. As it goes up here, it gains heat. Now, that heat does not come back here again, [fol. 286] but it goes out through that door. When you figure on even one-half per cent.—Mr. Taggart said, and also, in the opening, I believe Mr. Ely said, the change is one per cent.—even making it one-half per cent., and even with this big amount of heat of Smith's, you lose more heat than you put onto your eggs, and therefore, when you go around this, you have to put in extra heat from the hot water pipes.

Now, Mr. Taggart said, and I think quite fairly, that we are not tagging one single heat unit which came from the egg, and if it comes back again, we will say that it is transferred. Of course, we should not do that; but when we take it in the whole, as a complete unit, there is more heat leaving here than is coming from the eggs. Therefore, in a closed circuit, you do not bring the heat back again, but in the Smith arrangement, all of the heat that comes out of these lower eggs does bathe the upper eggs as it goes up, and gives heat out as they are ready to receive it. Smith is perfectly right, and his meaning is clear. It is an operative device; outside of a few ambiguities, all he said is true, but change the order and it is not true.

The reason for that is that, heretofore, I think—I was not present at the trial—heretofore they treated that as a single circuit, neglecting entirely the heat that goes out through this fan, and trying to figure—it is not a small quantity; one-half per cent. looks very small, but when you figure it on the vast amount of air that is being handled, and raise it 30 degrees, and put into it humidity, that is a big item; then you find that the amount of heat removed is much more than the 50,000 eggs will give.

[fol. 287] Q. Suppose it is; when it comes over, cooled, until 21 there, will it not have heat again from the pipes?

A. It will get it from the water, but it will not be egg heat; that is my point. Mr. Smith calls for the hotter eggs and the hottest eggs to give up heat to the coldest eggs. That he absolutely does. Now, if you sandwich these in, as has been shown in a number of devices on the market today, Petersime and the others, Robbins and Bundy, if you sandwich these in, then, if you do not have your hottest eggs at the bottom and your coldest at the

top, you cannot say that that heat goes around the eggs. This is not a closed circuit.

Q. You mean by your answer——

A. I mean that neither in material nor in heat is it a closed circuit, because you are blowing out material here and with it you are blowing out heat which is greater than the amount of egg heat.

Now, even if it were not greater—suppose it were only 50 per cent., or only 20 per cent. of the egg heat, you could not say that all that egg heat came back and it is not material because you are blowing the air out and blowing it in.

In addition to that, you are blowing steam in, in the pipe shown in Fig. 2 as No. 26. So that it is not a closed circuit.

Q. You mean, by "closed circuit", one from which there will be no emission?

A. Emission or admission of heat from anything except the air. Now, if it were a closed circuit, no one could say that the heat did not return and go around there, but it is not a closed circuit, and both heat goes out, moisture goes out, air goes out, and some things come in, from another source, to the eggs.

[fol. 288] By Mr. Toulmin:

Q. Now, Dr. Greene, let me ask you, right at that point: Have you made a calculation, so you can give the Court the exact figures in support of those last general statements of yours, about this operation?

A. For Smith?

Q. For Smith.

A. I have estimated, your Honor, from the data supplied on the chart of Mr. Taggart's, that if the Smith machine were loaded, the average amount of heat per thousand eggs per 24 hours, over an average period, we will say, of complete incubation, would be 3,575 British Thermal Units, which is our unit of heat, being the heat to raise one pound of water one degree.

The amount of heat to heat the air 30 degrees, using the figure which Mr. Taggart has given us for the amount of air handled by the fans, 1,500 cubic feet per minute per fan, using the one per cent. humidity, the amount of heat for the air is 900 British Thermal Units per thousand eggs

per day. That is only one-fourth of the heat from the biological action. The heat supplied by the stream, however, for humidification, would be 2,540 British Thermal Units, and the amount of heat lost through the walls would be 521. So that we have there approximately 4,000 British Thermal Units delivered, wasted, and 3,575 given up by the eggs, showing that there is more heat, much more heat lost than is given by the eggs; and were it only 500, or even a smaller amount than the 3,575, the same statement could be made, namely, that it is not a closed circuit as far as heat is concerned; and, of course, we know it is not as far as material is concerned.

[fol. 289] Q. Proceed with your patent; you have not finished.

A. Now in the patent, there is a statement regarding the way in which this current of heated air is produced. In Claim 1, it has to be produced by other means than a variation of temperature, and that, of course, means the gravity method of circulation. Not to be critical, in a way, I do not think we should call these convection currents because, normally, convection currents mean currents carrying heat in the material, and that can be formed by a fan as well as anything else. I know what the combination is, and I think it would be better to call it gravity circulation; and it seems that Claim 1 asks or calls for some method other than the hot air method.

However, when we come to Claim 2, it speaks of a power driven current, and power, in this sense, of course, means energy; and although the form shown in the picture is a motor driven fan, this claim could, in my opinion, refer to a chimney effect current, because it is power.

Now, we come to the third claim. He speaks of a "mechanically moving means", and "mechanically moving", I think, means something that is rotated.

In the fifth claim, the claim distinctly asks for a power driven fan. There it is quite distinct and definite. In this patent, Mr. Smith is taking his eggs from the earliest stage of setting, to use another term which is sometimes used by poultrymen, from the time heat is applied in order to develope the egg to the hatching out of the chick; and as shown by Mr. Taggart in his chart, the last three days are the peak days for heat production. Mr. Smith had the problem

[fol. 290] of handling that big amount of heat, and he does it, as you can see from my numbers, by taking out just about as much as this brings in, which is a large quantity of heat to be handled and a large quantity of eggs; and this is his solution, which is a solution and it will work just as he says it will work.

However, in it, he does require this corridor, which is not a mere passage; and in talking of the James Way passages, usually. Mr. Taggart spoke of them as ducts or channels; and then, when Mr. Ely referred to them as corridors, meaning these devices here, he spoke of those channels and ducts as corridors.

Now, I firmly believe that if Mr. Smith in a patent, had made a small passage here, 28, which no one would call a corridor, and said that was a corridor, in this patent, that would be a corridor for the patent; and so, when the word "hatching" is used, or "setting", or "incubation", what other people mean may be quite different from what Mr. Smith means; and he uses here something that I do not understand, what the word "vitalizing" means.

By the Court:

Q. Well, is the word "corridor" to be construed in connection with the context, to show what it is applied to?

A. Yes, I think it is. I think, when Mr. Smith draws his claims, he is drawing them with this specification and the drawings before him.

Q. Well, does he say anything about the size of the corridor?

A. In this patent he says that it is one in which—let me get the wording here. He does not give any size, but he [fol. 291] gives a drawing. He says the figure which he is picturing is nine feet high, eight or ten feet wide, and any desired length; and then he says:

"Entrance to the corridor is gained by a door 8, and the compartments behind the curtains contain elevated stationary racks 9 which are within convenient reach of the attendant for introducing the fresh supply and from which elevated position the trays may be shifted at the proper time to a tier of tilting racks 10 on a lower plane and suspended therefrom by links 11."

In other words, this thing which he calls the corridor 5 has in it trays, stationary runs within convenient reach. It has a door for the entrance of the attendants, and to me, this particular disclosure is for a large capacity device to carry eggs from the earliest stages of incubation up to and through the hatching period.

(Short recess.)

By Mr. Toulmin, Jr.:

Q. Dr. Greene, referring to the Smith Patent, particularly Fig. 1, what would happen to the operation of that machine if the cold air inlets were placed beneath the hatching trays at the bottom of the egg column?

A. The heated air from the pipes 28 would partially run out into the atmosphere and would not ascend through the egg column, and at the top of the egg column there would not be as much returned air because of the higher pressure on the discharge opening.

Mr. Toulmin, Jr.: Will you read that answer, Mr. Reporter, I must have missed something.

(Answer read.)

[fol. 292] Mr. Toulmin, Jr.: Will you read the question again to the witness? I do not think he has completed the answer.

(Question read.)

A. It would not work. As I have said, that would be a place of high pressure, and there would be a delivery there, so that if the inlet were placed at the bottom of the egg column—will you read the question?

(Question read, as follows: "Q. Dr. Greene, referring to the Smith Patent, particularly Fig. 1, what would happen to the operation of that machine if the cold air inlet were placed beneath the hatching trays at the bottom of the egg column?")

A. As I said first, if the air inlet were placed at the bottom of the heating element of the egg column, no air would flow in but the air would flow out at that point, and then the atmospheric pressure would be established at that point and this egg column would then become a sub-at-

mospheric column, so that the pressure, as you went up, on the egg column, would get lower and lower, and this would be a true induced draft or sub-atmospheric pressure column.

Q. Now, Dr. Greene, suppose that we put the fan of Smith, instead of at its present location, at a point at the top of the egg column, blowing upwardly, what would happen to this machine?

A. The egg column would then be a suction column and a large quantity of the air would pass out through pipe 28 because it is directly in line with the fan. The air would also be blown over above the plate 22 and some would [fol. 293] escape through the so-called inlet. However, there would soon come a time when the amount discharged through 28 would be so great that I believe that, then, the opening 24 would become an inlet opening.

Q. If the fan were located as we are now discussing, to direct the air upwardly from the egg column, the fan being located over the egg column, would the egg column beneath the fan be a pressure column or a sub-atmospheric or suction column?

A. It would be a sub-atmospheric or suction column, the fan directed upward and pulling the air up through the egg column.

Q. Now, Dr. Greene, have you examined the defendants' machine, the James machine?

A. I have.

Q. Will you be good enough to describe the operation and construction of that machine as you understand it. Will you look at the drawings that are before you, of the defendants' construction, and use those for a brief description of the defendants' construction, bringing out those points that you think should be emphasized in connection with the operation and construction of the defendants' device?

A. Your Honor, the vertical longitudinal section shows two egg compartments directly below the word "water-pan" on this drawing. In each of them will be found ten egg trays. At the center of the space above these egg chambers, and separated therefrom by a cross-hatched partition beneath the water pans and directly above the word "water-pans" is an impeller which, by its rotation at 750 to 860 revolutions per minute, sucks air up through the

uncross-hatched part of that partition from the egg chamber, because, as this impeller rotates, it drives the air out [fol. 294] centrifugally, and, of course, the air has to flow in to take the space occupied by that discharged.

The impeller, your Honor, is before you here. You will also note in the picture that there is another cross-hatched partition directly over this impeller, which has an opening in the center. That partition is the upper part of a chamber within which the impeller turns and through which the air delivered from the impeller must pass. In this longitudinal sectional view, however, at the extreme right and left of the egg chambers, you will see an open space through which the air that enters the top of the impeller must pass, being drawn from this egg chamber.

While looking at this picture, if you will look at the bottom of it you will see the so-called turbulator or stirrer, a sample of which is before you on your desk; and beneath that impeller is shown a pair of dotted holes—dotted lines which represent holes in the bottom of the egg chamber and communicating with the atmosphere. There are four of these holes under each stirrer or turbulator, each one of which is an inch in diameter, so that we have four one-inch holes connected with the atmosphere and establishing at this point atmospheric pressure.

Now, the experiments made by Mr. Taggart indicate that this impeller produces no flow at the top of the egg chamber; its anemometers did not move. He stated that he did not take any readings in the channels or ducts, and he did not know how much was driven out, but had there been any flow upward, it would have appeared back in the top of this egg chamber and would have shown a flow downward, because if there were circuits set up, it would, [fol. 295] of course, have come down in this upper part. Evidently that did not happen, because there was no registration on these upper anemometers. So that we have in this region at the bottom of the egg chamber, a region on which air enters from the outside, which is practically atmospheric—a little bit below, because the air flows in. It may be that the rotation does a little bit of drawing, but in this place the pressure produced by these openings is such that we get here a level of atmospheric pressure, and as a result, the fan is an induced draft rather than sucking the air up into this upper part, and the impeller, which Mr.

Taggart has called a fan, is drawing the material up toward the top.

This device, which I have called an impeller, and called it so advisedly, is merely a set of paddles with plates on each side but no confining shroud or volute casing which makes it into a fan. I will show you tomorrow some publications of the Buffalo Forge Company, or some other fan company, in which you will see the fan must have not only this impeller in it to make it a fan, but it must have the proper surroundings if you want to produce proper velocity. You can produce, by this device as it is, velocity, but to call it a fan per se is entirely wrong. Not to be quite facetious, we may say that a coat or a pair of trousers alone does not make a suit; it takes both of them.

So that this impeller, which some manufacturers call a fan rotor, is not a fan until you put all the parts on it. The top plate and the bottom plate, which Mr. Taggart called the housing, would be the side housing, but in this particular impeller we have no complete surrounding, properly [fol. 296] shaped housing to direct the flow of this air efficiently.

Q. While you are on that subject, Dr. Greene, will you explain to the Court how that impeller, or whatever name you may call it, operates on the air? What is its action on the air, with these flat blades?

A. Well, personally, Mr. Toulmin, I think that the air between the blades, the sector of air between the blades, starts to move with each of them. We cannot say, as we could say regarding this aeroplane, or this plane (demonstrating) that if I push it ahead in the air, I push the air out in front of it, and pull the air behind it. In a fan, I like to think of it as moving a slug of air between the two plates. Now, as soon as that begins to take up the rotating motion, there is set up centrifugal forces and we get so-called centrifugal pressure developed, which causes the air to flow out of it. As soon as it does flow out of it, that slug of air leaves behind it a place of low pressure or vacuum, which other air must flow into, to fill. Now, it is true, undoubtedly, that the advancing blade does push the air and produce a region of low pressure behind, but we must not forget that there is another blade behind, pushing that air around. So I like to think of it as a slug of air contained between the two plates, caused to rotate, just as

we used to throw a tin can of water around our heads; the centrifugal force would pull it out nad hold it out straight; so here the centrifugal force developed on this air produces what is known as centrifugal pressure, and if there is nothing there to resist it, the air flows out. Now, as soon as it does flow out, if we do not put a proper member around it to direct that air efficiently, we merely get a discharge, [fol. 297] and if that discharge is conducted away, we do get a flow of air; and therefore, I think the manufacturer has properly called it an impeller.

This impeller, then, draws the air from the egg chamber, which is a sub-atmospheric location.

If you will now turn, your Honor, to the other section, which is entitled "Vertical cross-section of Defendants' incubator," we see this impeller at the top, driving the air off, and as it goes off, it has to pass over a water pan. This water pan has a top over it so that we can vary the surface. The water pan is at one end of the chamber, above the air chambers, and at one side, looking back again at the first picture, the longitudinal, we notice one water pan on the right and another one on the left; so that some of this air which is delivered has to pass over the water pan called for on the vertical cross-section. You can see it here better. Here is the impeller. Here are the two water pans, and we have the two partitions, one above and one below, which confine the impeller, with clearance, so that when this rotates, these slugs of air, which really are continuous streams, are driven off to the periphery of this large space, part of it passing over these two water pans, and the water pans are covered by a sliding top to regulate the amount of water exposed to the air.

This air then passes to the four openings in the two doors which connect with the body; part of it goes to four openings in the back wall leading down in the hollow wall through passages, channels or ducts, to the bottom of the egg chamber.

[fol. 298] Now, if we open the front doors, we see the bottom of the egg chamber on the left, and in it we see this stirrer which is driven by the same shaft which drives the fan, and right below that impeller or stirrer you will see the four openings which lead in. In this so-called fan chamber or ducts, the James Company has introduced the four outlet openings through which any air that has to be sent out of

this machine, foul air, really circulating air, goes out, and these are each one inch in diameter. So that in this arrangement we have four one-inch holes which may lead air out, and eight in the bottom allowing air to enter.

We can see in this, if we look now at the cross-section, your Honor, that the fan is driving the air over the water; it then passes over these black heating pipes, which are filled with water, comes down through the channel in the back wall of the mixing chamber, comes down the front ducts or channels in the front door to the mixing chamber, and in this place as was show by the smoke of the carbon dioxide, the vapor that was formed there from the water, probably. We had a turbulent condition where the incoming cold air mixed with the warm air from the side walls, that warm air being warmed by the hot water pipe.

Now, a curious thing happens with this James system. The air which is driven by the impeller and caused to pass over these water pans, evaporates some of that water, proceeds to chill the air, because the evaporation of water requires heat, as it does in a boiler, and that heat can only come from the air itself. Consequently, the air is cooled, and this cooling, in the James machine, takes out 3,780 British Thermal Units per thousand eggs per day, whereas [fol. 299] the biological heat given up by the eggs is only 1,275 British Thermal Units per thousand eggs per day, and the amount of heat required for warming the air is 210.

You will note, in this machine, by cutting out the hatching eggs, James has saved or has removed from his machine two-thirds of the heat, practically; that is, the heat during the last three days is 180 per cent. of that during the first 17½ days. So that the heat of the Smith machine, which was 3,780 British Thermal Units per thousand eggs per day, from biological heat—I beg your pardon, 3,575—here is reduced to 1,275.

Now, your Honor, the only way to compare these machines is to reduce it to the same comparable standard, and I have taken 1,000 eggs per day. I did not want to deal with big numbers nor small numbers, and so that unit is the same. If we had made it per cubic foot or per linear foot of air traveled, it would not have meant anything, because they are not comparable machines. This is compact; the other machine is large, because of that large corridor, and

so, by reducing it to 1,000 egg unit, we have a comparable figure.

In going through the James egg chamber, assuming 1,000 eggs of average heat—which means the average during the whole period of hatching, because that is the only way you can get at it—we have taken into the air stream 1,275 British Thermal Units per thousand eggs. We have cooled off the air stream by the fresh air that was introduced, by 210 British Thermal Units per thousand eggs per day. We have taken out of the air by this water, 3,780 British Thermal Units, taking out by the water alone practically three times [fol. 300] as much as the animal heat. So it shows very clearly in this case, the animal heat put in is more than used up by humidification of water. Then it passes over these pipes to regain its heat. We throw out here practically all the heat that was put into this air in the form of temperature rise and humidification, and it leaves it at this point. Then we bring it down to this place, and here we have not the stream of heated air from the corridor, but we have a stream of air made up of several hot streams from passages, plus a cooling effect of this cold air, and it is not responsive to this Smith Patent at all, because this is not a stream of heated air. It is a stream of cooled air, if anything, by this cold air at the bottom.

Q. At that point, Dr. Greene, drawing a conclusion for the benefit of the Court, from these figures, do you say that any of the animal heat of any of these incubating eggs is carried around from the top of the egg chamber to the bottom, and conveyed to the eggs a second time?

A. I say, no, it is not, in the sense of the Smith Patent, and in the sense given to it by Mr. Taggart in his testimony, where he said we should treat the thing as a whole, which is the correct way. My answer is, No.

Q. And the reason given for that is that the animal heat that may have accumulated at the time you get to the top of the egg chamber, is removed in its eventual process, before the air returns again to make another entry into the egg chamber, is that correct?

A. That is correct, and more than that amount, of heat is removed, which has to be restored by the hot water pipes.

Q. Then the next question I want to ask you is whether, [fol. 301] in the Defendants' machine, you have in the egg

chamber a condition of sub-atmosphere of super-atmosphere; that is, do you have a condition of suction in order to get the cold air in with the hot air, or do you have a condition of pressure? Which is it?

A. We have a condition of suction to get the cold air in, because there is atmospheric pressure outside the box, and to get air through there, the pressure must be less at this point, and since there is friction here, the pressure at the bottom must be higher than the pressure above, so this must be still further subatmospheric.

Q. Yesterday, when we were having a demonstration by the Smith Company on the Defendants' machine, do you recall the taking of readings by anemometers in the lower trays, the intermediate trays and the top trays, by Mr. Taggart and yourself, in the presence of his Honor?

A. I do.

Q. Have you a record of the readings that you took as to air speeds from the bottom up to the top?

A. Mr. Taggart and I read these together. The first reading, near the middle, was 136 feet per minute. Two rows from the bottom, zero, and up in the second row, 145 feet per minute.

Q. Well, then, to restate that in the order which it occurs, from the bottom to the top, it was zero, 136 and 145, is that correct?

A. That is correct.

Q. In other words, the speed of the air was greater at the top of the egg chamber than at the bottom, is that correct?

A. That is correct.

Q. And what mechanical reason is that due to, by reason of the peculiar construction of the James incubator?

[fol. 302] A. I think the principal reason for that was the interchange in the air passages. Of course, the pressure being less at the top than at the bottom, the air would expand slowly, but I do not think it would account for the difference which occurs here.

Q. Let me ask you this question: What is the action of that aluminum member, that impeller, as we call it, with respect to moving the air through the egg column, if it does move; is it pressure action or is it suction action?

A. It is suction action, absolutely.

Q. Does that air rise through the egg column after having been churned at the bottom by the stirrer?

A. It does.

Q. Due to pressure from the impeller, or due to suction of the impeller?

A. Suction of the impeller.

Q. And why is it that the suction of the impeller makes it do that? Show his Honor that thing, so he can see.

A. On the model itself, your Honor, we turn the impeller, producing suction near the center, due to the throwing off of these slugs of air. Going to this picture, which is larger and I think, therefore, a little better, we have the pressure set up here of, let us say, minus two units; that is, two units below the atmosphere. As we go down here, we have to get into a region of higher pressure to overcome this friction, and at the time we reach this bottom we are at a pressure, let us say, minus one-half unit, or one-half unit below atmosphere, and going through the holes, we are at atmospheric pressure; so that throughout this column, the pressure gradually gets lower and lower and lower, so that by the time we come to the impeller, we have the lowest pressure within that chamber.

[fol. 303] By the Court:

Q. You mean directly underneath the impeller?

A. Yes, sir, directly, and also that same pressure, or pressure slightly different, because of the passages, would be set up on the top of this impeller. Thus we have here, due to the throwing off of these slugs, we have set up here a region of low pressure. The same thing would happen in the water, and this would be the impeller, if put in the proper casing, of a very poor centrifugal pump, and no matter whether you worked it right-handed or left-handed, those slugs would be sent off, and as soon as they are, some other fluid must be put in.

Q. What is the effect of that hole at the bottom?

A. The shaft goes through here.

Q. Is that the upper part or the lower part?

A. This is, I think, the upper part. I do not know exactly how it works. Have you the catalog?

Mr. Toulmin, Sr.: That is the upper.

The Witness: No matter whether it is one one side or the other, it is in the region——

Q. That hole does not go through there?

A. Yes, there is an opening both below and above, your Honor. You see, in the little model here, there is the lower side, and the piece right here is the upper side, so there is an opening on each side, and in this case, the air is sucked up from the air chamber through this end one, flows over and in.

Q. That goes out through the sides? A. And then it is drawn out to the side.

[fol. 304] Q. What is the effect of that hole in the middle underneath the impeller?

A. That sucks from the lower side——

Mr. Toulmin, Jr.: Let me ask a question, your Honor.

By Mr. Toulmin, Jr.:

Q. Dr. Greene, with this impeller, where does the impeller get its air supply? That is, does it get it at one side, or both sides simultaneously?

A. It does get it both sides simultaneously, but each side is connected to the egg chamber at the top.

Q. And one side communicates with the center of the top of the egg chamber, that is, the lower side, and the top side of the impeller communicates with the ends of the egg chambers, is that correct?

A. That is correct, I would like to mark, for your Honor's future reference, the vertical longitudinal section, in which I will place arrows, coming up on the extreme right, which I letter "A", and on the extreme left, which I will letter "B", showing the air flow into the opening at the center of the top plate, and then I will put in arrow "C" and arrow "D" to show the air coming from the egg chamber into the lower part of the impeller.

By the Court:

Q. This point to which you have directed this arrow here, is there an opening here right underneath these pans, right underneath the impeller?

A. Yes. You will notice it is not cross-hatched, and right on this side, through there, is not cross-hatched.

Q. You have arrows through this hole?

[fol. 305] A. That is a shaft, and usually that is closed over, although, were it not closed over, it would only suck air out of the egg chamber and would not do any damage.

Q. You say that is drawn in?

A. It is drown in; it is induced draft.

Q. Through the upper part of the impeller?

A. Yes.

Q. And goes out the other way?

A. Goes out the middle, between the two plates, into the square box which receives the slugs of air as they are driven off.

Q. I see what you are describing.

A. Now, I would like to call the attention of the Court to the fact that in this vertical cross-section of the defendants' incubator, the outlet for the foul air is marked "X" by me, and it is beyond the water pan and beyond the heating coils in this chamber in which the impeller operates, which is under high pressure, showing very clearly that the outlet for the foul air could not be in the egg chamber, which is a sub-atmospheric place.

In other words, James, in this little model, takes this place of higher pressure produced by the impeller, and takes his air out. He does not have an outlet for foul air in his egg chamber. The only openings to the atmosphere in the egg chamber are those openings for suction at the bottom. And so, in all of the claims which Mr. Smith makes, he says—I would like to read one of them only—he says, your Honor, "Arranging them at different levels in a closed chamber having restricted openings of sufficient capacity for the escape of foul air." That is in Smith, 28. At this point——

Q. Does he say they are in the egg chamber?

[fol. 306] A. In the egg chamber, and he claims it to be in the egg chamber, but in the James device, the exit or the exhaust is not in the egg chamber, but is in a place of entirely different pressure.

Q. Would that be material?

A. It would mean that, through the smaller hole, you could get a larger quantity of air, because the pressure is higher.

Q. You mean, in the James Way?

A. In the James Way, yes, sir, and it would have that effect, because it is in a place of high pressure, whereas, in Smith, the pressure at the top of this egg chamber is above the atmosphere, but very slightly above it, as can be shown by tests which we hope to show you; but in the James

machine, the air is thrown off after it passes through this place.

Q. Now, of course, as an engineer, the James machine is not a machine to keep in heat, because it discharges its hottest air, and it also does not conserve moisture, because it discharges its wettest air. That is, here you have the air which has just been moistened, which has just been heated, and then, because of the arrangement, it is a mechanical purpose and the manufacturer is willing to say, "I will do it this way for convenience," and he puts his outlet at this particular point.

Q. With loss of heat?

A. I think he loses more heat that way than he would the other, yes, sir, because in the Smith machine he takes it after the biological heat has been given to the colder eggs.

By Mr. Toulmin, Jr.:

Q. And, Dr. Greene, in that case you say that they discharge more moisture? Is that what you say, in the James [fol. 307] machine?

A. I should say so, yes, sir.

Q. Is there any necessity, in the James machine, for conserving moisture, in view of the fact that you do not have the last three days of hatching the eggs?

A. There is not.

By the Court:

Q. What do you call this air feed space there between the floor and the racks?

A. This is the device in here; this is the channel, and in the back you have to have the same thing. It is shown right down there. That is the door.

Q. I understand that.

A. You have to have them on each side.

Q. The door comes up tight to the racks?

A. Yes, sir. That forms the front. Now, you also utilize the rear the same way, as Mr. Taggart showed us yesterday.

Q. How about this side here?

A. That is merely this other passage here, in this view; that is merely this passage to let air get out from the chamber in here. Now, in ordinary construction, there is no double—it is only in the egg chamber—there is no double

wall here, when you use these in sections, but when you get to the upper end, you do have an air chamber in which certain devices are placed.

Q. Do they fit tight together, rack to rack?

A. Yes, sir, and they are made so that a man, when he makes a little money, can enlarge——

Q. It is a little deceiving here.

A. That is merely because of the distance between the cleats. That is, this would represent the vertical post on which the cleats are placed, and these are the edges of the [fol. 308] tray racks, do you see, in cross-section.

Q. Well, your theory or explanation of it is that the air is reversed in its order of transmission, then?

A. Well, the air in this machine is sucked upward rather than forced upward, but the egg arrangement is immaterial. That is, the eggs can be sandwiched, as it was called, or arranged in any order; many, many thousand different arrangements. No one is better than the other but in all of them, the heat which the eggs give up is not maintained in that churning around, because more must leave through the waste air, even with the very little air left out, and also by the humidity which is allowed to get out, than these eggs give.

Q. Well, if this impeller does not have any driving force, so far as the air is concerned, that is, forcing the air, what is it that causes the circulation?

A. Your Honor, I did not say there was not driving force. I said there was not an efficient one, and I would not dare call that a fan. That is, no matter what you put around this or how you control it, if you rotate that, and put liquid, water or air between, that is going to be sent out.

By Mr. Toulmin, Jr.:

Q. Let me ask you a question, Dr. Greene, which I think will answer what is in his Honor's mind: when this impeller is rotated, it throws out air, and that air travels over the heating pipes and water-pans down to the bottom of the egg chamber; that is correct, is it not?

A. That is correct.

[fol. 309] By the Court:

Q. What drives the air down to the bottom of the chambers?

A. The centrifugal force of this rotating—that is, you get your fluid rotating and it builds up what we engineers call a centrifugal force, a centrifugal pressure. Your Honor, if your take a bucket of water and pour a little around, you would find the water raised up along the edge and formed a parabola, due to that same effect we have in this device.

Q. The impeller forces the air down to the bottom of the racks?

A. In this James machine, he needs about 860 revolutions per minute for this design to get the air that he thinks we should circulate in the incubator.

By Mr. Toulmin, Jr.:

Q. After the air gets down to the bottom of these air passageways on front and back of the egg chamber, what happens to the air that is so delivered? Does it remain under pressure or does it convert over into suction, due to the impeller action?

A. By the time the air reaches the bottom of the channels in the front and back of the incubator, it is my belief that most of its pressure has been used up in friction and possibly speeding up the air to a place of lower pressure, so that when it is turned around at right angles and delivered from the two sides toward the middle, where it meets this rotating stirrer which tries to move it in the other direction, and with the openings from the outside air into this same place, which is now of low pressure, produced by the impeller, we have a mixing as has been described by Mr. Taggart.

[fol. 310] Q. All right; stop right there, Doctor. That is the second phase of the operation. Now, the third phase is the upward movement, which I understand is due to the induced action and suction of the impeller on the last half of the movement?

A. Yes.

By the Court:

Q. Well, would not that impeller tend to drive the air back up through the channels through which it came?

A. The stirrer?

Q. The stirrer; would not that tend to drive the air back up through the channels through which it came, as well as up through here?

A. It is moving at a slow rate, your Honor. Mr. Taggart has made tests, which he reported or testified to today, in which he finds very little velocity after you get up to several of these trays, and up at the top there is no velocity, in his anemometer.

By Mr. Toulmin, Jr.:

Q. Top of what, Doctor?

A. In the top of the tray chamber.

Q. You are not referring to the passageways?

A. No.

Q. You are referring to the egg chambers?

A. In the tray chambers. Now, he said, in his testimony, that there may have been some air driven up through the passages, front and back. I noted on the machine over there that he had provisions for introducing into that glass chamber a small anemometer. Now, he never used that, for some reason. I do not know what it was or why he [fol. 311] did not, but he said he never took readings in the channels while the stirrer was moving, but were there a discharge of the air up through that channel when the impeller is not running, but when the stirrer is, that air which is discharged up at the top ought to have returned back through the eye of the impeller and given a downward reading, in those upper anemometers; and since there was no reading there, I take it that there was no discharge upward.

The impeller or stirrer rotating does have a tendency to do the very thing which you said, namely, to push it out, because that acts as a stirrer and centrifugal force would tend to make the air flow up; it will meet this incoming air and stir it up, and mix it, so that you do get this discharge upward through the egg chamber.

Q. Now, Doctor, as I understand it, the air that is coming down from the passageways on either side is coming from the impeller; the air at the bottom, being engaged by the stirrer, is being thrown out in a direction exactly opposite to that of the incoming air from the passageways?

A. Right.

Q. And that results in mixing?

A. Right.

Q. Now, if the air in the egg chamber were under pressure, would it be possible to bring in any cold air through the cold air openings in the bottom of the egg chamber?

A. No, indeed.

Q. Because, if air in the egg chamber were under pressure, it would blow the air out of the openings instead of taking the cold air in, is that right?

A. That's right.

Q. Further, the air must be under suction in the egg chamber?

A. Yes.

[fol. 312] Q. Now, what is the effect, to conclude this subject, of this four-arm flat-bladed stirrer that rotates about two hundred twenty revolutions per minute, in the bottom of each one of these egg chambers?

A. Its effect, as its name indicates, is to stir up this air to take the flow, not from one passage, or corridor, or duct, but from two opposing ones, driving a single high velocity up through the middle, which would occur if that impeller did not operate. Also it tends to take the cold air which is coming in and mix it, through the discharge of the warm air, to prevent these cold spots which were spoken of today by Mr. Taggart.

Q. And what draws the cold air in?

A. The low pressure within this lower part of the egg chamber.

Q. Being lower than atmospheric pressure?

A. Absolutely.

Q. If you did not have the impeller, would you have hot streaks and cold streaks, due to the four streams of cold air and two streams of hot air coming into the bottom of this chamber?

A. Yes, you would.

Q. And what instrumentality is it that James uses to prevent these hot and cold streaks?

A. A stirrer or turbulator.

Q. And after the air leaves the region above the turbulator, the stirrer in the bottom, or air mixer, is there anything else to work upon the air, of a mechanical nature, until it rises by suction and goes into the eye of the impeller again?

A. There is nothing. I would like to call attention to the fact, however, that in Mr. Taggart's tests, the velocities indicated by the anemometers placed above each other gave [fol. 313] varying velocities, which, in my mind, indicates that the velocity through anyone of the vertical passages formed, if you look down, or the velocity along a diagonal passage as you could look through, is not uniform, and to my mind, there must be a spill backward and forward throughout the egg chamber to cause these differences in velocities, one over the other.

There is also, as he called to the attention of the Court at the test made yesterday, certain dead spots which indicate that the air is not flowing in that direction, in those locations, in a vertical direction.

Q. Let me ask you a question right there: This series of readings that were taken before his Honor yesterday at the test, where there was substantially zero at the bottom, and then 136 about the middle, and 145 at the top, in the James egg chamber, would that indicate to you that you were proceeding from a position whether the air at the bottom of the egg chamber was about stationary, to a point at the top where it was moving at some degree of speed, due to the suction action of the impeller? Is that a correct interpretation?

A. The whole thing is due to the suction, but the change in velocity, to my mind, is due to the fact that there are, in these single lines of velocity, currents of velocity through this egg chamber; that is, when we have a drop in pressure in the air stream, there is practically no difference in velocity, if the passage is of unform cross-section, because as much material goes in at one end as comes out the other.

Now, it is true that, as you get further along into [fol. 314] regions of lower pressure, the air expands a slight amount, but it would not account for the difference in velocity shown here. That is, these differences in velocities, to me, indicate the lack of individual lanes of currents; that is, there is fluctuation.

The Court: I think we had better stop at this point.

(Proceedings adjourned to Friday morning, February 2, 1934, 10 o'clock.)

ARTHUR M. GREENE, continued on behalf of defendants, testified as follows:

Mr. Toulmin, Jr.: Before I start with Dr. Greene, I think I had better clean up this exhibit situation so as to get it in an orderly fashion. In the preliminary injunction nineteen exhibits were offered in court and marked here. I will re-offer those in order that the record may be perfectly clear that we had offered them, and that will save duplication of any further exhibits on that subject.

Mr. Ely: I wish to object to the receipt of those in evidence until I have a chance to refresh myself on what they were, and I want particularly to object to that sheet which was said to allege defendants' construction not found to infringe. I want to object to that as not proper proof. You will recall that sheet.

[fol. 315] The Court: You had better let Counsel look over it and then they had better be re-introduced.

Mr. Ely: There are a lot of affidavits. I object to those, too, your Honor.

The Court: He is not offering the affidavits.

Mr. Toulmin, Jr.: They are all marked. They have got a serial number. We have a right to refer to them anyhow in case anything should come up, because they are of record in this court, but it makes an orderly process of keeping track of the numbers, that is all.

The Court: There may be some of them that you want to refer to now, and they may be held until Counsel has a chance to examine them. I understand that the affidavits on the preliminary injunction should be considered as part of the record here.

Mr. Toulmin, Jr.: Yes, your Honor, because of the statements of operation there by Mr. Taggart that we want to reply upon which we think is valuable in connection with this case.

The Court: I thought you meant in their entirety.

Mr. Ely: They are here. There is the affidavit of Dr. Greene and others. And, of course, I want to make very plain my objection to Exhibits 18-A, B and C, three drawings showing the internal construction of various parts. I want to object to 19, the chart showing the various types of construction which have been held by the District Court [fol. 316] and the Court of Appeals as non-infringing, and

a quotation printed at the bottom of the Court's opinion I object to that for two reasons. I think first, because they have not been proven, and I object secondly to picking out certain isolated sentences, picking them out of the opinion.

The Court: In view of the examination already had, I do not see any harm in it being received.

Mr. Ely: I object to it being received as labeled "Defendants' construction held not to infringe".

The Court: Of course, that is only the conclusion of the draftsman.

Mr. Ely: It gets in the record under that heading, and Counsel refers to that as "this is the defendants' construction not held to infringe". I object to it going in in that fashion.

Mr. Toulmin, Jr.: We can interpolate that in the title.

The Court: The Court is going to consider this drawing with the evidence in mind.

Mr. Ely: The primary thing I object to is the illustration of some incubators or some constructions that are under the heading "defendants' construction not held to infringe". That gets in the record and gets to the Court of Appeals, and the Court of Appeals looks at that and says "Here is the defendants' construction not held to infringe". That is not proven anyhow.

[fol. 317] The Court: Haven't you a corresponding drawing here——

Mr. Ely: Yes, we had a witness that testified as to the fact that those were the constructions that were held to infringe. We had a witness that was present at the time of the trial.

The Court: I assume that there will be a proper foundation laid for it.

Mr. Toulmin, Jr.: Mr. Taggart admitted most of those constructions are correct. I am going to supplement it, but I would like to have them marked.

The Court: We will hold the reception of that document at this time. Of course, as pointed out by Counsel, there should be a statement of someone that that is the one.

Mr. Toulmin, Jr.: We already had that from Mr. Taggart. He identified three of those. He identified the Petersime. He identified the Hillpot experimental one, as he called it, and he identified the Blum—that is the Bundy,

and he said he could not identify the Boling, and that led to a long discussion about Boling.

The Court: Do you question those three drawings as being the drawings that were construed in those cases?

Mr. Ely: Yes, your Honor. There is one drawing under the Blum heading which is wrong. Those three drawings under the Boling heading, they are all wrong, and the Hillpot drawing is apparently a drawing of an experimental machine, which, as I understand it, was not the machine [fol. 318] that was in suit, simply a machine which Mr. Hill testified that he had experimented with, and the fact that that drawing is in the record of the Hillpot case, does not say that that drawing shows the thing that was up for decision.

May I mark what we object to? We object to this one (indicating).

Mr. Toulmin, Jr.: Don't mark them. State what you object to.

Mr. Ely: All right. I object to the third drawing in the column headed "Smith vs. Blum". I object to all the drawings in the column headed "Smith vs. Boling". And I object to all the drawings in the column headed "Smith vs. Hillpot".

Mr. Toulmin, Jr.: I think that that merely goes to the weight of this.

The Court: Also the record should be made as clear as can be. Take this Hillpot exhibit or diagram. If that does not represent the drawing of the machine that was passed upon by the Court, I do not think we ought to have it here as representing such.

Mr. Toulmin, Jr.: I will ask Dr. Greene about this right now, as long as this question is raised.

The Court: All right.

Mr. Toulmin, Jr.: I offer in evidence a certified copy of the record of Buckeye and Smith vs. Petersime, and a certified copy of the briefs that were filed in that case, all in the Court of Appeals, the record showing the record in the [fol. 319] District Court, of course, as Defendants' Exhibit 30.

(Certified copy of record and briefs in Buckeye and Smith vs. Petersime in Court of Appeals, marked Defendants' Exhibit 30.)

Mr. Ely: I object to Dr. Greene testifying on the record.

Mr. Toulmin, Jr.: You wait until I get the testimony and then you can put your objection in.

I offer in evidence the record of Buckeye and Smith vs. Boling in the Court of Appeals for the Sixth Circuit, which contains the illustrations on the Indiana case upon which the Court framed its judgment, and the photographs of that installation, and also contains the testimony in the Indiana case. This is a certified copy from the Court of Appeals for the Sixth Circuit, so that we can get the Indiana testimony this way. That is offered as our Exhibit No. 31.

(Certified copy of record of Buckeye and Smith vs. Boling in the Court of Appeals for the Sixth Circuit, marked Defendants' Exhibit 31.)

Mr. Toulmin, Jr.: And I offer in evidence the record of the Court of Appeals for the Sixth Circuit, of Buckeye and Smith vs. Blum, a certified copy, as our Exhibit No. 32.

(Certified copy of record of Court of Appeals for the Sixth Circuit, in Buckeye and Smith vs. Blum, marked Defendants' Exhibit No. 32.)

[fol. 320] By Mr. Toulmin, Jr.:

Q. Dr. Greene, have you examined the record in the case of Smith vs. Petersime in the Sixth Circuit, known in this record as Defendants' Exhibit No. 30?

A. I have.

Q. With special reference to the defendants' construction in issue in that case?

A. Yes.

Q. Will you look at the chart marked Defendants' Exhibit 19—I will use that number until we have the formal offer—and look at the left-hand view, and state whether that is a correct illustration of the defendants' construction as you understand that record?

Mr. Ely: I object to that, your Honor. The record is there, and I do not see what the object is of having Dr. Greene testify as to what the record shows. Furthermore, there is no objection to the showing of the Petersime. That Petersime is correct.

Mr. Toulmin, Jr.: I am proving 19 now. If I don't prove it all, you can object again.

The Court: I will sustain the objection. I think that is a matter for the Court to say on this record whether it describes it or not.

Mr. Toulmin, Jr.: The same objection occurred to their Exhibit 27.

The Court: Counsel stipulates that there is no question about this Petersime drawing.

Mr. Toulmin, Jr.: If that is the case, we will pass to the [fol. 321] next drawing. I raise no objection to 27, because I think it is helpful to the Court to get as much short cuts on these constructions as possible and save your wading through.

Q. Dr. Greene, have you examined the construction shown in the second line of illustrations under the title of "Smith vs. Blum", and have you likewise read the record on the subject of defendants' construction in the Smith vs. Blum record, Exhibit No. 32?

A. I have.

Mr. Ely: I object to the question, your Honor, as incompetent and improper.

The Court: Well, it is preliminary—this question.

Q. Will you state whether or not the construction shown on Exhibit No. 19 under the Blum title is a correct duplication of the construction shown as of the defendant in that record?

Mr. Ely: I object t the question, your Honor.

The Court: The question of whether that is a device shown in the patent proceedings is one thing. The question of whether it is a drawing of the patent that was involved, is another. That was passed upon——

Mr. Toulmin, Jr.: You mean the defendants' construction that was passed upon?

The Court: Yes, that is what I mean. It might be used in the record for some other purpose. The question is what was the claim. Under the patent- that were determined in that case.

Mr. Toulmin, Jr.: Now I am asking him if that construc- [fol. 322] tion shown on Exhibit 19 is a correct illustration

of the construction that was in issue according to that record? Therefore, when you look at that 19 you will know that that is a correct duplication of it.

Mr. Ely: There are three constructions shown under that Blum heading.

Mr. Toulmin, Jr.: And they are all shown in the record.

Mr. Ely: We are making no objection to the top two. The top two are correct, but the third one is wrong.

Mr. Toulmin, Jr.: Now, if your Honor will look at the third one, and this illustration (indicating), you will see that there is a duplication.

Mr. Ely: What is that illustration?

Mr. Toulmin, Jr.: That illustration is of the defendants' construction.

The Court: In what respect do you claim that this is in error?

Mr. Ely: We claim it is in error in the fact that these blades are set at an angle, your Honor. This is a correct construction (indicating).

Mr. Toulmin, Jr.: These are set at an angle (indicating).

The Court: You claim that these are straight up and up?

Mr. Ely: Yes, this is the way that the blades were (indicating), as you will see from what Judge Westenhaver said. I think the vice of the whole thing is that you have got a man testifying here that was not at the trial and does [fol. 323] not know what the construction was that was involved. I think the record speaks for itself.

The Court: Of course, we are presented here with something by way of comparison. I do not think that I could accept the conclusion of the witness on that subject. The Court itself will have to say from an examination.

Mr. Toulmin, Jr.: Very well, your Honor. I was hoping to save that by a short-cut. If you feel that way——

The Court: It is not for him to conclude from this whole record whether such and such was the case. We can get the facts from the record itself. Objection sustained.

Mr. Toulmin, Jr.: Exception, please, with your Honor's permission.

Q. Now, Dr. Greene, have you examined the illustrations under the title of Smith vs. Boling in the Indiana court, the third group of illustrations, and also have you examined the Buckeye vs. Boling record, Exhibit No. 31, and particularly the testimony reproduced therein, and illus-

trations relative to the Indiana suit, to see if those illustrations are correct illustrations?

Mr. Ely: I object to the question, particularly the last part of the question, your Honor. The last part of the question was whether those were correct. I object to the latter part of the question for the same reason the Court sustained the same as before.

[fol. 324] Mr. Toulmin, Jr.: Exception, if the Court please.

The Court: The Court will take the record there and examine it and see just what the determination was.

Mr. Toulmin, Jr.: Exception. We now tender this Exhibit 19 formally, so that we can preserve our record.

The Court: Yes.

Mr. Toulmin, Jr.: We ask that it be marked for identification under Rule 46, as our Exhibit 19 for identification.

(Illustration marked Defendants' Exhibit 19 for Identification.)

Mr. Toulmin, Jr.: The night before last, your Honor, Dr. Greene was referring to this illustration of the defendants' construction (indicating). I think we ought to have that in. We offer this illustration in evidence as our Exhibit No. 33.

(Illustration of defendants' construction marked Defendants' Exhibit No. 33.)

Mr. Toulmin, Jr.: We offer this vertical cross-section of the defendants' incubator as our Exhibit 34.

Vertical cross-section of defendants' incubator marked Defendants' Exhibit No. 34.)

Mr. Toulmin, Jr.: We offer in evidence the catalogs of the plaintiff as submitted here by the plaintiff in response to our request when we exchanged catalogs and instruction sheets. These catalogs consist of the Smith catalog Type No. 47, Smith catalog entitled "Smith's 52,000" and "Smith's Service", a catalog entitled "The New Smith [fol. 325] 52,000 Electric", and the new Junior 30,000 catalog; catalog entitled "Hatchery Opportunities", and operating instruction book for the steam-heated Smith Incubator, and the operating instruction book for the electric-heated Smith Incubator.

The Court: They are all attached, are they not?

Mr. Toulmin, Jr.: Yes, that is a single exhibit.

The Court: All right.

Mr. Toulmin, Jr.: They are offered as our Exhibit No. 35.

(Several catalogs of plaintiff marked Defendants' Exhibit No. 35.)

Mr. Toulmin, Jr.: We offer in evidence the document entitled "Separate Hatchers" which is a sales document admitted by the plaintiff to have been sent out to the trade in connection with this subject-matter in response to our motion for production of papers and admissions of documents, and ask that those be marked as Exhibit 36.

(Document entitled "Separate Hatchers" marked Defendants' Exhibit No. 36.)

Mr. Toulmin, Jr.: We offer in evidence a circular of the plaintiff company on the subject of separate hatchers and their incubators, entitled—I will be unable to give the title, your Honor. I offer that as Exhibit No. 37.

(Circular of plaintiff company on the subject of separate [fol. 326] hatchers and their incubators, marked Defendants' Exhibit No. 37.)

Mr. Toulmin, Jr.: We offer a second circular of the Smith Company on the same subject, of a different character, as No. 38.

(Second circular of the Smith Company on same subject, marked Defendants' Exhibit No. 38.)

Mr. Toulmin, Jr.: We offer in evidence the circular letter to the trade of the Smith Incubator Company under date of October, 1930; that is also on the question of the spread of disease in separate hatchers. That is offered as our Exhibit No. 39.

(Circular letter of the Smith Incubator Company, dated October, 1930, on question of spread of disease in separate hatchers, marked Defendants' Exhibit No. 39.)

Mr. Toulmin, Jr.: We offer in evidence the service bulletins 1 to 100 of the Smith Incubator Company as our Exhibit No. 40.

(Service Bulletins 1 to 100 of Smith Incubator Company marked Defendants' Exhibit No. 40.)

Mr. Toulmin, Jr.: We offer in evidence the Smith Incubator Catalog F Type 40-47. I find no date on it. That is offered as our Exhibit No. 41.

(Smith Incubator Catalog F Type 40-47, marked Defendants' Exhibit No. 41.)

Mr. Toulmin, Jr.: We offer the Smith House Organ called "Smith's Chickograms" of January, 1932, Volume 7, No. 1, as our Exhibit No. 42.

[fol. 327] ("Smith's Chickograms" of January, 1932, Volume 7, No. 1, marked Defendants' Exhibit No. 42.)

Mr. Toulmin, Jr.: We offer in evidence the copy of the contract between Smith and Buckeye, with particualr reference to the separate hatcher question, which has been produced here by the plaintiff in response to our request, as our Exhibit No. 43.

(Copy of contract between Smith and Buckeye, with reference to separate hatcher question, marked Defendants' Exhibit No. 43.)

Mr. Toulmin, Jr.: We offer in evidence the Buckeye letter of June 30, 1931, with attached illustrations of the Buckeye separate hatcher, as our Exhibit No. 44.

Mr. Ely: I will reserve my objection until I know what this is about. I wish to note, however, that any statements made in there are not binding on the plaintiff.

The Court: You refer to the letter? Is that the letter or the contract?

Mr. Ely: No, the contract is all right, but I state that we are not bound by any statements made by the Buckeye Incubator Company in their catalog or in this letter, and with that reservation, it may be received.

(Buckeye letter of June 30, 1931, with attached illustrations of the Buckeye separate hatcher, marked Defendants' Exhibit No. 44.)

[fol. 328] Mr. Toulmin, Jr.: We offer in evidence the Buckeye Catalog which illustrates both the incubators and the separate hatchers, that catalog being known as Catalog Copyright 1932. We offer that as our Exhibit No. 45.

Mr. Ely: With the same reservation, your Honor, as not binding on the plaintiff.

(Buckeye Catalog Copyright 1932, illustrating both incubators and separate hatchers, marked Defendants' Exhibit No. 45.)

Mr. Toulmin, Jr.: On the preliminary injunction we offered in the volume of the prior art, which I take it is in now. In addition to that we gave notice that we relied upon the evidence that was in the file wrapper, a patent of Goldstein No. 1,137,752. We offer that as our Exhibit No. 46.

(File wrapper of patent of Goldstein No. 1,137,752, marked Defendants' Exhibit No. 46.)

Mr. Toulmin, Jr.: For the purpose of the state of the art, we offer Wood's Patent No. 656,760, as our Exhibit No. 47.

(Wood's Patent No. 656,760 marked Defendants' Exhibit No. 47.)

Mr. Toulmin, Jr.: Now, your Honor, several times here we have mentioned the case of Jones vs. Cyphers. That was decided in this Court by one of your predecessors, and afterwards went to the Court of Appeals. We offer that on the subject of incubators and the question of analogous art. I have here the prior art, which was set up in that [fol. 329] case, and I desire to offer it as a single exhibit, not for the purpose of anticipation but to illustrate what was in that case. That is offered as our Exhibit No. 48.

Mr. Ely: I object to that. I object to loading up the record with a lot of things here which we have not seen. We do not know what they are.

The Court: I will give you the opportunity to examine it, Mr. Ely. I will give you ample time to do that. I will withhold reception of them until you have examined them.

Mr. Toulmin, Jr.: Suppose we mark this for identification.

The Court: Yes.

(Case of Jones vs. Cyphers marked Defendants' Exhibit 48 for Indentification.)

Mr. Toulmin, Jr.: I think your Honor inquired the other day about whether we had any patents of our own. We have under which we are operating. We also own another patent. I have here in a single volume the following patents

which I am going to offer as a single exhibit, to wit, Fullington 1,205,445; filed September 18, 1914, patented November 21, 1916, which is owned, and I will prove the ownership later by the defendant; the patent of James L. Nix, No. 1,548,478, filed January 28, 1924, issued August 4, 1925, which is owned by the defendant, and I will prove it in due course by witnesses; the patent 1,751,093 of George Markey, filed February 6, 1926, and issued March 18, 1930. This [fol. 330] patent has to do mainly with the separate hatchers and noted on its face as being assigned to the James Manufacturing Company. I will prove it more formally later, if necessary. The patent to G. T. Markey, No. 1,796,872 of March 17, 1931, which deals with the egg tray racks, which is assigned on its face to the James Manufacturing Company. The patent of G. T. Markey, No. 1,837,458 of December 22, 1931, which is assigned to the James Manufacturing Company, and the patent No. 1,939,908 of G. T. Markey, issued December 19, 1933, and assigned on its face to the James Manufacturing Company, which is our basic patent under which we operate on our incubator. I offer these as a separate exhibit, to be known as our Exhibit No. 49.

Mr. Ely: I object to the receipt in evidence of all the patents, in that folder except the Fullington patent, which is prior to the Smith, but the others are all later patents, and I do not see where they have any bearing at all upon the question of either validity or infringement.

Mr. Toulmin, Jr.: They have a vital bearing. It has been the doctrine, particularly in the court of this circuit for a great many years—I have the authorities here—that patents have been taken where he operates under those patents, and I propose to have Dr. Greene so identify it before he gets through, and the other witness, and particularly the main patents under which it is operating, being prosecuted [fol. 331] in the Patent Office, had the patent in suit submitted to the Patent Office as a basis for rejection, and over that patent in suit the defendant's patent was allowed, and the distinction was drawn between the two structures by the Patent Office, and there came a decision of the Patent Office that the courts recognized as a vital factor on the question of infringement.

I will now cite to your Honor the authorities if you care to hear them at this time.

The Court: You have not given the proof as yet.

Mr. Toulmin, Jr.: Not yet. But I have to mark it first before I get down to my detailed proof.

The Court: Mark it for identification.

Mr. Toulmin, Jr.: I will renew the offer later after you hear the proof.

(Folder of patents owned by defendants marked Defendants' Exhibit No. 49 for Identification.)

Mr. Toulmin, Jr.: They are not offered as to our patents, other than the Fullington, except on the question of anticipation.

The Court: It is your claim, as I understand, that because the Patent Office approves a patent application, you claim that that act of the Patent Office is evidence of non-infringement?

Mr. Toulmin, Jr.: Yes, it is a presumption of non-infringement.

The Court: Made subsequent to the issuing of the patent in question.

[fol. 332] Mr. Ely: May I just read a syllabus from a decision just hot off the griddle in the Eastern District, that defendants' structure is covered by another patent does not support a claim of non-infringement. (Reading from syllabus.) That is from Judge Moskowitz.

Mr. Toulmin, Jr.: That is an exception to the rule. The real rule as drawn by this Circuit——

The Court: I wish before the matter is disposed of you will call my attention to your cases on the question. Of course it is important.

Mr. Toulmin, Jr.: Yes, it is vitally important to this defendant's interests.

Mr. Ely: Before you get any further, make a note that the case to which I refer of Judge Moskowitz is Berger Brothers vs. Whitney Metal Products Company, and it is reported in United States Patents Quarterly, Vol. 20, page 96.

Mr. Toulmin, Jr.: My authorities are coming over now from Mr. Powers' Office.

The Court: Well, proceed with the witness and we can take it up later.

By Mr. Toulmin, Jr.:

Q. Now, Dr. Greene, will you be kind enough to turn to the group of patents in Defendants' Exhibit No. 49 for Identification, and in particular to the last patent in the group, No. 1,939,908, and state to the Court whether you have examined that patent in connection with the defendants' construction now in issue here as illustrated by such illustrations as Defendants' Exhibits 33 and 34, and com-
[fol. 333] pare the two together. Have you done so?

A. I have read this patent to Markey, your Honor, No. 1,939,908, and the description and mode of operation are substantially the same. In fact, the description of this machine in the patent could be used in explanation of the action of the James machine, as it is in detail and in action identical with this—I would rather say not in detail, but in action, it is identical with the James machine which I have described.

Q. Have you examined one of the James' machines itself, such as the one that we saw in Mr. Ely's exhibit of the Smith Company the other day?

A. I have examined a number of James' machines.

Q. Will you please answer the same question in connection with that patent and the actual machines themselves?

A. Yes, sir.

Q. What is your answer? Are they alike or are they different?

A. They are alike.

Q. Do you find any addition or change in the actual machine that is not shown in that patent?

A. Yes, I do.

Q. Call attention to anything that you see, no matter how detailed, which may be different.

A. Please repeat the question.

Q. I will repeat it for you. Call attention to any difference between this patent and the actual machine which you observed, no matter how detailed that change may be.

Mr. Ely: I object to that. I do not see the purpose of that. We are not suing them on the patent. We are suing them on the structures down in the warehouse.

[fol. 334] The Court: Objection overruled.

Mr. Ely: Exception:

A. Your Honor, I would like to describe the machine from Fig. 3 on the second page of drawings.

Q. To shorten it, merely call attention to any differences between this and the actual machine, because his Honor is already familiar with our defendants' machine.

A. You will notice that the impeller has blades which are not plane, but are bent. You will note at the bottom the stirrer does not have radial blades, but straight blades. You will note a spring 74 for the purpose of keeping the belt tight on the stirrer, and you will find at the top of Fig. 3 openings, 76 and 77. The opening 77 is identical with the one in James' actual machine. It is controlled in the same way. The opening 76 is not present in the James machine, but is replaced by four openings under the impeller.

The Court: One is at the top and the other is at the bottom of the machine?

A. The openings for the cold air, the fresh air, in this machine, are at the top, but into the place of low pressure, however. Those are the only differences.

Q. In the defendants' actual machine it also has one of those top openings, has it not?

A. Oh, yes, I said 76 was identical with the one——

Q. And in addition to the air opening at the top in the defendants' machine, the defendants' machine as built, has these four openings between the bottom air stir-up or air mixer? Is that correct?

A. Yes.

[fol. 335] The Court: In the defendants' machine, the opening at the top is the exhaust?

A. No, your Honor. It has an opening which has a thermostatic control and allows extra cold air to come in should it get too hot.

The Court: And the defendants' machine——

A. The defendants' machine at the top has a thermostatically controlled valve which is normally out of operation, and this one (indicating) 77 in this patent, is normally out of operation. That is what Markey has done is to take his fresh air in through the opening 76 which is always open. The James Company has taken this opening 76 from

the top into the lower part of the egg chamber, and in place of a single one it has placed those under each of the impellers.

By Mr. Toulmin, Jr.:

Q. Now, Dr. Greene, let me ask you one more question. You have mentioned the fact that the impeller at the top in the Markey patent No. 1,939,908, has curved blades. I call your attention to the next patent of Markey, No. 1,837,458, and will ask you to state whether you find there the impeller as actually used in the defendants' machine with straight blades?

A. That is similar to that used by the defendant with radial blades. In Fig. 3 the impeller is shown with the radial flat blades.

The Court: That is the same as this impeller here (indicating)?

[fol. 336] Mr. Toulmin, Jr.: Yes, your Honor. I better offer that in evidence right now. I offer in evidence the impeller of the defendants' machine as our Exhibit No. 50.

(Impeller of defendants' machine marked Defendants' Exhibit No. 50.)

Q. This last patent you referred to shows the impeller such as in evidence No. 50?

A. Yes, sir.

Q. Now, Dr. Greene, if we will return to where we were when we left off, on Wednesday night, will you continue in further explanation of the operation of the defendants' machine in order to complete that explanation?

A. I would like to point out to the Court, as has been pointed out by the witnesses for the plaintiff, that in the James' machine when eggs have advanced to the seventeen and a half day condition, the door is opened in the front and the trays arranged in some particular order—not necessarily adjacent—are removed from the incubator and taken to the hatcher. Then, too, new trays with fresh eggs are placed in.

The Court: Placed in where?

A. Placed into the egg chambers.

The Court: Where; any particular place?

A. In the places left vacant by the removal of the trays of the seventeen and a half day eggs.

The Court: The seventeen and a half day eggs would then be at the bottom or any other location?

[fol. 337] A. They could be anywhere. One might be at the bottom and the next one might be at the middle, or they might be at the top, your Honor, as was very nicely shown in the Exhibit No. 27 by Mr. Taggart.

By Mr. Toulmn, Jr.:

Q. You are referring to this drawing of the plaintiff (showing to witness)?

A. I am referring to this drawing. In this particular drawing, had we opened the door on the seventeenth and a half day, we would have taken out the eggs from the third tray and the top one, then we would put in there two new trays; so that in the next picture he has correctly shown that the eggs in these trays, the first and the third trays, one day old. And in the first drawing showing the James Way arrangements on Exhibit No. 27, the fourteen day eggs are placed in the fourth tray from the bottom and the sixth from the bottom. These become the seventeen and a half day eggs. In the third figure they are withdrawn, and the same positions correspond to the first day eggs, if that next day were shown, but it is not shown, as the next figure is for a week later, and I just wish to bring to the attention of the Court again the fact that after allowing eggs to stay in this egg chamber in one fixed position for seventeen and a half days, the trays with eggs are then removed, taken to the hatcher, where the excessive heat given up is cared for in that separate instrumentality. This excessive heat of the last three and a half days is not found in the James incubator at all.

Q. Have you any calculation that you have made on the [fol. 338] question of whether or not in the James incubator the egg heat is carried from the top of the egg column around back to the bottom of the egg column?

A. I have made such calculations.

Q. Will you please produce it if you have done so?

A. From the chart which Mr. Taggart produced, Exhibit 3 of the plaintiff, I have added the mean ordinance for each day, which gives the amount of heat delivered by an egg for that day, I have added those up, considering the positive

and negative parts, and I find that for one thousand eggs in the James arrangement for seventeen and a half days, assuming the average over this period which is correct, we get 1,275 B. T. U. of heat delivered per thousand eggs per day.

I have then taken the amount of air delivered from the James machine and taken into the James machine, of course, with its extra humidity, and find that the discharged air contains 5,880 heat units per thousand eggs per day——

The Court: What do you mean, from the discharge there in distinction to the fresh air?

A. The fresh air is taken in at the bottom at the temperature of the room, which I have taken as 70 degrees, your Honor, and a relative humidity which we say would be forty per cent. I have then taken this hot air which goes out at the top at the James temperature of one hundred and a half degrees, with a humidity which is normally held there, and the addition of heat to the air to raise it from [fol. 339] 70 to 100½ or I took 30 degrees to make it a little easier to work out, and the additional moisture which was sent out, would account for 5,880 heat units per thousand eggs per day, showing that in the James machine more heat is removed than is given by the egg columns.

Mr. Toulmin, Jr.: We offer in evidence this tabulation as our Exhibit No. 51.

(Tabulation marked Defendants' Exhibit 51.)

Q. I thought you had covered the Smith side of the tabulation 51. Evidently you haven't. Will you now refer to Exhibit 51 and describe the operation in the Smith machine?

The Court: You say here, "egg heat at the top of the column". I thought you were referring to the average egg heat over all the eggs.

A. Exactly, your Honor. The air containing that heat goes out at the top of the column, so that we couldn't have that heat there. We have to take the average.

The Court: That is included in the discharge air of 5,880?

A. Yes, the air from the column comes up with 1,275 heat units in the eggs. It then goes over the water tray

which abstracts heat from the air, but that heat remains in the cycle, although not available for the eggs.

A little bit beyond that we come to the opening which discharges 5,880 units per thousand eggs per day, and then [fol. 340] this air goes over the water pipes to get the necessary heat, because you notice that you are removing much more heat than the eggs supply, and the rest comes from the water pipe.

The Court: It goes around again?

A. Yes, and the thing which comes around we might say is the heat from the water and not the heat from the eggs.

The Court: The heat from the water pipes?

A. Yes, which comes through the pipes from the water inside.

By Mr. Toulmin, Jr.:

Q. You have been referring to the James construction in response to his Honor's questions. Will you proceed with that answer as to the Smith side of that tabulation?

A. In looking again at Exhibit No. 27 of the defendant, we see the Smith arrangement with the hottest eggs in the hatching stage at the bottom, and the coldest eggs at the top. From Mr. Taggart's figures along the same way that I computed the others, I find that the eggs is 3,575 heat units per thousand eggs per day. In this case, however, the amount of heat removed with the air—that is delivered through port 28 of the patent, is only 3,440 heat units per thousand eggs per day, leaving a balance of 135 to go over into the return air, and that heat is more than used up by the heat going through the walls, which I have [fol. 341] not brought into this picture. The great animal heat produced in the Smith machine may account for the fact that they have to use cold water at times. If the air and water do not pick up some of this animal heat, and in this machine, your Honor, the first two numbers indicate the conservation of moisture and heat in the Smith machine.

In the James machine, 5,880 heat units are discharged, whereas in the Smith machine 3,440 are discharged. The major part of each one of those numbers—a little over a half—is due to the moisture, and in Smith there is less heat

removed by the moisture than there is in James, so that to my mind indicates that Smith is conserving moisture.

Q. May I ask a question at that point, Dr. Greene? What causes the additional heat from the eggs in the Smith machine, as indicated on the Exhibit No. 51 in your hand, as compared with the heat from the eggs in the James machine?

A. It is entirely due to the heat from the eggs—from the 17½ day to the 21st day. From Mr. Taggart's drawing, I find that 180 per cent. of heat in the first 17 days is equal to the heat going out in the last period. In other words, the Smith machine has developed in it 280 per cent. of the heat developed in the James machine by the eggs.

The Court: Supposing it has, supposing that is true, what is the difference? They both hatch the eggs, don't they?

A. The great difference, your Honor, is in the arrangement of Smith. They both hatch eggs. Smith wants to [fol. 342] transfer from his eggs all the hottest egg heat to the cold air eggs. He does that by putting the hottest eggs at the bottom where the air bathes those eggs, and carries it up for reception in the coldest eggs. He then delivers almost all of that heat through the vent 28. He says in his patent that the heat from the hotter eggs is to go to the colder eggs, and that can only be true with the arrangement which is shown in his patent and which he practices in the patent. That is the patent is absolutely right on the statement, but in no other arrangement without the hottest eggs are at the bottom and arranged in order as Smith arranges them, can you say that the heat from the hottest eggs will go to the coldest, because this is not a closed circuit. I am afraid that in the previous suits—I do not know anything about the detail of the presentation—they have not considered a great amount of heat removed through the vent 28; and in the Smith machine, since he puts his hot eggs at the bottom, his statement is absolutely right, and when he speaks of different levels, he can only practice the different levels which he has shown in order to make that statement correct.

The Court: Your point is that under the James Machine you can put these trays of eggs in any location?

A. Absolutely.

The Court: But you cannot do it under the Smith machine?

A. That is correct.

[fol. 343] The Court: They won't hatch because the hotter the eggs, those that put out the most heat, must be at the bottom, and his system of air circulation——

A. Is different. They will hatch in there. That is, they will hatch in the machine, because it is a complete machine. They will be treated for hatching in the James machine.

The Court: Supposing you put your eggs from 17½ days to 21 days up at the top in the Smith machine.

A. Then if you did that, your Honor, you would not practice the Smith patent. They would hatch, though.

The Court: Just as well as they would below?

A. I believe so.

The Court: Heat does not go down, it goes up, doesn't it?

A. Yes, but he would have to supply the necessary heat from his hot water coils in that case.

The Court: And he would get too much heat if he increased his heat below and the heat above goes out—he would get too much heat for those eggs?

A. No, because the eggs below wouldn't then be giving up that heat. They would be colder eggs below.

[fol. 344] The Court: I am speaking of those at the top. They would get their own heat and they would get the accumulation of the added heat? What would be the effect upon those eggs?

A. No. You see the hatching eggs use 64 per cent. of the total heat. And now in this arrangement which I have shown here, or which is shown by the defendant, the heat given up by the eggs goes into a column of air which is rather large, and when it goes in it changes the temperature slightly. When this heat comes through, the first 17½ day eggs, they are placed below. The air would then strike these hot eggs which are so hot that they don't take in heat. They are giving heat out, and they would continue to give it out, and that heat from the eggs in the hatch-

ing stage, 64 per cent., would be immediately driven out on the top of Smith, and it would never get back to his egg column, so in order to practice his teaching, there is no arrangement possible outside of the arrangement of the patent.

The Court: Then you mean that with the same amount of heat that is used now to hatch the eggs with the coldest eggs at the bottom that it won't operate to hatch the eggs if those same eggs are placed at the top of the incubator?

A. I don't mean that, your Honor. I am sorry——

Mr. Toulmin, Jr.: May I ask a question?

[fol. 345] The Court: Yes.

Mr. Tolumin, Jr.: We are drawing here a distinction between the teachings of what the patent is—

The Court: I was getting at the facts of that distinction.

Mr. Toulmin, Jr.: It may be confusing because we are not trying out the identity of what Smith does in his machine or may do, and our machine.

Mr. Toulmin, Jr.: Let me ask a question, your Honor, which may crystallize the whole thing.

By Mr. Toulmin, Jr.:

Q. Dr. Greene, based upon what you have just been saying, what do you understand to be the teaching of the Smith patent in suit as to the arrangement of the eggs?

A. The Smith patent in suit teaches that the oldest eggs—the hottest eggs,—must be placed at the bottom of an egg column, so that any heat given off from those eggs will be transmitted to the eggs in an earlier stage of incubation in that same column. The eggs are arranged with the earliest eggs at the top, and as you drop downward you get to eggs which are in later stages of incubation or hatching, and are hotter and give off more heat.

Q. Let me ask you, could you follow that teaching in the Smith patent if you placed the hottest eggs at the top and gradually came down with getting colder and colder eggs?

A. Not as Smith calls for it.

Q. Would you get the advantages taught by Smith in his patent if you arranged the eggs other than it specifies?

[fol. 346] The Court: Does the claim say anything about the use of heat from the eggs—the lower eggs—to heat the eggs above?

A. Yes.

Mr. Toulmin, Jr.: Just refer to the claims and answer his Honor's question on that.

A. I am reading from the latter phrase in Claim 1, "and the units of heat will be carried from the eggs in the more advanced stage of incubation to those in a less advanced stage for the purpose specified."

In Claim 2 the same phrase is used.

In Claim 3 the same phrase is used.

The Court: What purposes are specified? It says "for the purposes specified"

A. The purpose specified is to conserve, your Honor, and to get along with less external heat supplied to this incubator.

The Court: What does it say in the patent application there about the purpose? It says for the purposes specified?

A. The purpose specified is to keep the hot eggs down, keep the temperature properly, also to give heat to these upper ones, which he does by circulating air around——

The Court: That is getting at the question of what he said, not what your construction is.

[fol. 347] A. Oh, I beg your pardon. I will read from the patent on page 2, line 79: It reads:

"It, therefore, appears that the improved apparatus and method contemplates the application of hot air circulating in a column with such speed as to keep the temperature substantially uniform and so arranging the eggs that the fresh eggs are placed at one point in the column of air and held in a horizontal plane until they reach a predetermined stage of incubation and then put at a different point in the same column of air and kept in plane inclined to the horizontal and thereafter placed at such a point in the column of air that the forced draft of air acts to hold the eggs at a uniform temperature and to prevent them from becoming overheated"

We are down now to about the eighteenth day, "and thereafter placing the eggs into final position for the hatching operation."

The Court: All right.

By Mr. Toulmin, Jr.:

Q. Now, Dr. Greene, have you made a careful comparison between the Smith patent in suit and the defendant James' machine as to the features of importance in the patent and in the defendants' machine?

A. I have.

Q. Will you proceed with such a comparison on each one of these features before the Court, and if you have a tabula-
[fol. 348] tion, will you follow that tabulation, so that his Honor can follow it with you.

Mr. Toulmin: I would like to offer this tabulation in evidence so that you will have a concrete piece of evidence, as our Exhibit No. 52.

(Tabulation of comparison between Smith patent in suit and James' machine marked Defendants' Exhibit No. 52.)

Q. Dr. Greene, before you take up the comparison, may I ask you one question along the line of his Honor's questions to you on the subject of carrying the heat, which may clarify it a little further? In the Smith structure, as I understand it, your position is that the only way in which the units of heat will be carried as required by the claims is to have the most advanced eggs in point of age and at the bottom of the egg column; is that correct?

A. That is correct, and I think that the drawings will bear it out if we show the amount of heat which is removed from this machine before any of the air column returns to this egg chamber.

Q. Now, will you proceed with this detailed comparison so that we can crystallize this matter?

A. The first difference, your Honor, is the size of the machine. In the Smith patent,—in the Smith commercial embodiment we have, as taught by Smith in his patent, a chamber of large dimensions, containing thousands of eggs, about the size of an ordinary room. An ordinary room is what we use in the patent. The capacity of the machine is

[fol. 349] from 30,000 to 65,000 eggs per machine. My notes taken at the Baby Chick Convention in Grand Rapids give me that figure of sixty-five. Comparing that with James, we find that James has a small box approximately three feet by six feet in dimensions, with a capacity of 5,000 eggs per machine. The 5,000 in this case include 4200 in the incubator and the remaining number would be in a separate machine, but it is called a 5,000 unit.

Second, the eggs are arranged in columns, in Smith, about six feet three inches high, closely spaced with eggs. In the James machine we have the eggs arranged in stacks about three feet high with the widely spaced eggs. In the James machine the eggs are placed side by side in a trough, and then another trough takes the other side, as you probably remember. Using this little egg, for instance (exhibiting egg), we had them placed side by side, whereas in the Smith machine the third one comes in to get a much closer arrangement. In the third place, we have spaced partitions, in Smith, extending the height of the egg columns to a point near the bottom or top of the room, forming a corridor between them large enough for a man to walk into in order to remove the eggs when the partitions are moved aside. In the James machine there is no corridor, and no space for a man to stand inside of the machine. There are no partitions to form a corridor.

Q. Right there, Dr. Greene, what is the importance or significance of the corridor and the machine being built large enough for a man to walk into a corridor in the Smith patent?

A. He has to have that unless he allows the air to leak out through the door. He must have a door for the entrance [fol. 350] of the man to bring the trays in. Then after the trays are in and the doors are shut, the shifting is done without the waste of moisture. He is trying to conserve moisture. Therefore, he has this large corridor in which the man must work.

Q. In view of the fact that the Smith machine, as you have testified, has air under pressure, due to these fans, what would happen to the hot air and the moisture in the Smith machine if you opened the doors and did your work in shifting the large number of egg trays to those eggs that were in the incubator and the contents of the incubator?

A. The corridor being under the highest pressure from the fan and the door being large in size, all of the outlet air would then go through this large door and all the fresh air that came in would chill down the room and be blown out even if it were hot. With it, of course, would go all the moisture in that atmosphere,

Q. Supposing instead of having a corridor in the Smith machine you opened up doors on the side and shifted the eggs or handled the eggs with the doors open, what would happen to the hot air inside?

A. The same thing would happen.

Q. In the James machine they have no corridor, as I understand you?

A. They have no corridor.

Q. They don't go inside the James machine?

A. They don't go inside the James machine.

Q. They do open the doors to shift the eggs from the incubator over to the hatcher?

A. They do that.

Q. And to load the machine?

A. Yes, sir.

[fol. 351] Q. And they do not disturb those eggs at any time so far as moving them is concerned during the period they are in the incubator? Is that correct?

A. If by moving you refer to moving the trays, you are correct.

Q. There is no shifting of the level of the tray in the James incubator?

A. No shifting of the tray.

Q. Why is it in the James machine if you open the doors there is no difference, whereas you say it would make a difference if you open the doors in the Smith patent type of machine?

A. In one case we are trying to conserve moisture, and you have a large space in the corridor, whereas, in the other one you have a smaller space; and also you have only to move two trays. Supposing the machine is running—supposing the fan is running, it takes you but a short time to move two trays out and put two trays in and close the door.

Q. In James?

A. In James. Whereas, in Smith, there are 72 trays to set if you are putting in fresh eggs, and that would take considerable time.

Q. In view of the fact in the James machine that the air column is not under pressure, what have you to say about the air being blown out even though the stirrer and impeller are being operated when the doors are open in James?

A. The egg chamber itself would have air sucked into it, but since the fan is running there is a discharge down through the channel. The device there would deliver air, and so you would have air removed, even in the James machine, if that door is opened.

[fol. 352] Q. But the amount would be small——

A. It would be very small.

Q. (Continuing.) —because you only have it open at intervals and then for a short period?

A. Yes, sir.

Q. Now, would you proceed with paragraph 4 of the comparison?

A. I would like to point out also, your Honor, under 3, that in the Smith machine time is taken to not only put the fresh eggs up in the upper rack, but you have to take the lower eggs from the hatching racks out, with the chicks, of course, now, and put in new ones and then move the chain or move the rack. That is as Smith details in his patent, not as he practices. In the commercial embodiment he has to move all of those eggs. He has to move first of all the three hatching trays. That takes time. If your Honor will allow me to point out on the Smith patent, the first thing to be done would be to move the three trays, 13, which would have eggs in them, which would have chicks in them. After moving trays, then you would have to take the three lowest trays out of the tilting rack 10. After having moved those, you would have to take the next three trays out and move them down. Then you would have to take the three trays above and move them down. You would then have to move the three trays from the top stationary rack and move them down, and then put in three new trays. The commercial embodiment is a great improvement in time over the Smith patent, and this is the method which is before the Court, as I understand it, and in this there is so much time taken that Smith could not afford to have anything else but a corridor in which the men could actually [fol. 353] work, and so, as I said earlier, in my testimony,

the word "corridor" to Smith does not mean a mere passage, but it is more in keeping with the dictionary definition of corridor, namely, a place for people to walk. I realize perfectly that the word "corridor" may mean anything that Mr. Smith wants it to mean, but in this patent it can only mean what he wants it to mean, namely, a place in which men will work.

No. 4. At the top of the partition are forced draft fans adapted to drive columns of air downwardly. These fans deliver from 6,000 to over 11,000 cubic feet of air per minute.

There are four fans in this case. In the James machine there are no fans, there is no forced draft. The volume of air in the front and back passageways is about 500 cubic feet per minute. We have taken that, your Honor, from Mr. Taggart. The average linear progress of the air suction is 47.5 feet per minute through the egg chamber. The suction of air per thousand eggs is 119 cubic feet per minute.

Q. Before you go to the fifth point, let us pause on number 4. In the first place, you say there are no fans. Recognizing that it would make no difference what you call a structure, but what it is, is important. Will you please state to the Court what is the difference between this top impeller marked Exhibit 50 here in the defendants' machine, and the fan which is marked 18 in the plantiff's patent?

The Court: Has he not already explained that? Has he not gone over that?

A. I don't think I have, your Honor, quite.

[fol. 354] Q. Make it brief for this contrast.

A. I will make it brief. The impeller which is only part —or which may only be part of a fan in order to make the fan, must be put within a casing. Mr. Taggart in his testimony spoke of the housing above and below the fan. That is true. There is such a housing there. But in order to make that a fan, in my opinion, we should restrain around the edge in the proper way the other part of the casing in order to take the air at one particular part with as little disturbance as possible. Then, as more and more air is added to the stream, bring it out here to the end with sufficient area to maintain that velocity. This is called the casing, and sometimes called the volute casing. In the

James device there is a periphery, and then top and bottom housing, using Mr. Taggart's expression, in which this air delivered is churned. Its velocity is not as it should be for a true fan. It does produce discharge, your Honor, because otherwise it could not circulate air. It does produce suction around a housing, but it turbulates and discharges this air in a very inefficient way, producing a pressure above the atmosphere in the chamber in which this impeller rests, and then it passes down front and back in the channels to the bottom of the James incubator, where the discharge through those channels front and back, is met by the opposing action of the stirrer, completely stirred and mixed with fresh air which is brought in at the bottom, and I have, as I told you yesterday, a booklet of the Buffalo Forge Company of 1914, which has been in my library and used, in which such a device is spoken of as the fan wheel, or in a later edition it is called the fan member. [fol. 355] And then in addition to that there is a picture right near by showing the whole thing with a casing, which is called a fan, and I wanted you to get my reason for saying this is not a fan in the accepted sense of the word. It does produce motion, but inefficiently.

The Court: If you have a fan confined as this is in the casing, you would have the same result, wouldn't you?

A. Not the same result. You would have a much higher result. You would get more air through and get a higher pressure.

The Court: If it was confined in a casing as this is?

A. You wouldn't have the resistance——

The Court: The shape of the fan is such as to throw the air out more, but if this were confined like this, above and below and at the side, wouldn't you get the same result?

A. Yes, sir.

Q. Wouldn't you get the same result as you do with this?

A. What were you comparing?

Q. What we call the fan——

A. No, sir, you get a much better result with the casing properly designed for it.

By Mr. Toulmin, Jr.:

Q. Dr. Greene, let me ask you a question. With that turbulator that is before you, Exhibit 50, as installed in the

[fol. 356] James machine, do you get the movement of the air in one direction only, or in a number of directions? What is it?

A. In this, the air is delivered outwardly and circumferentially, and we get the resultant motion, so that in this particular case it is moving in a different direction from every position. When you put the casing around here, you attempt to straighten those directions out so that the general column receives the air discharged in a proper way. We usually put that in there to direct that and get rid of the eddy currents which are produced when you do not have the proper confining passage.

Q. Why is it that James desires such a turbulent action from this type of impeller rather than a fan action with the true casing around it? What is the mechanical reason?

A. The reason is to get a stirring action up here, as well as in the bottom (indicating).

Q. What is the cause for the stirring action?

A. The stirring action is produced by the discharge from the individual plates not being directed into a properly shaped casing outside of it.

Q. I was referring to what is the reason in an incubator such as James, that James desires the turbulent action rather than the single direction stream action that we have been talking about in the Smith patent?

A. In the top of this casing within which the impeller is moved, there is a humidifying apparatus, namely, the waterpans. You have air coming up from below which has to meet the waterpans, absorb more moisture, and in order to make the discharge in the front and back channels more nearly uniform as to temperature, he uses that device.

[fol. 357] Q. And that stirs air over this heating device; is that right?

A. Yes, sir.

Q. Turn to the Smith patent in your hand. Does the Smith patent fan send the air in all directions or in a single direction?

A. The Smith fan is what is known as a propeller fan, and in general form it is the desk fan which has the propeller blade so formed that at the first discharge of the fan there is in general a high velocity downward current. This type of fan, according to Mr. Smith's specifications on page 2, line 11, states that the fan or series of fans 18,

mounted upon the hinged trap doors 19, forming the ceiling of the central corridor 5, constitutes the means for forcing the hot air through the chamber, and there are circular openings 20 provided in said doors, within which the fans are arranged properly.

I take that, your Honor, to mean that the fans should be so placed within the openings in the doors that any side action or centrifugal delivery would not take place for any distance because of the proximity of that rim, and therefore the air would discharge mainly downward, and this is a type of fan which does give a direct discharge and of high velocity.

Q. Now, will you proceed with the next part of the comparison?

A. No. 5. In the Smith machine over the fans are inlet openings in a typical machine having 78.5 square inches of space and over the outlet opening 162 square inches of space. In other words, in a machine which we will show the Court, there is a ten-inch circular opening for inlet, which is throttled down or could be throttled down according to the Smith patent, rather. And then there are four [fol. 358] rectangular openings approximately six and a half by six and a half, which when measured more carefully total up to 162 square inches, practically twice as much outlet as inlet.

In the James machine the opposite is noted. There are eight inlet openings an inch in diameter at the bottom of the machine, and four outlet openings an inch in diameter at the top of the machine; in other words, the outlets are one-half as large as the inlets, which is the reverse of Smith.

The sixth point which I would like to make is that Smith conserves moisture and James does not conserve moisture, because it has no draft to dry the eggs. As we will see later, the velocity in the Smith patent is so much higher than in the James machine that unless the content of the air is high, there would be excessive evaporation.

Q. While we are right at that point, let us settle that point. Have you examined the statement of velocity and the illustration as contained in Plaintiff's Exhibit 11-A, B and C, produced here by Mr. Taggart, a copy of which I hand you?

A. I have.

Q. Now, will you tell us whether in your judgment as an engineer, those figures are correct as indicated on that exhibit as to the air speed in the Smith machine, and if not, why not, so that the Court can have your reasons for the matter?

A. Taking the figures given by Mr. Taggart that the area of cross-section or floor area of the egg chambers in the Smith machine of the size tested by him is 75 square feet, and assuming as given by him that the four fans deliver six thousand cubic feet of air per minute, it is seen that the average speed of ascent through the egg chambers [fol. 359] with absolutely no structure within those chambers would be 80 feet per minute. I arrive at this conclusion, your Honor, in this way: If you have the quantity of air delivered per minute and divide it by the area of cross-section through which that air is flowing, the result is the average speed of the air.

If you don't mind an every-day expression, if we had a parade passing us, and we were told that a thousand men were passing per minute, and somebody told us that there were a hundred men in a row, we could easily divide that thousand by the hundred and tell us that there was ten lines passing us per minute. So in the air problem, if you have 6,000 cubic feet of air flowing through 75,000 square feet of duct perpendicular to the flow of air, we divide the 6,000 by the 75 and get 80. So that without any obstruction in these air chambers, the average speed of that air is 80 feet per minute.

Now, I have averaged up the readings given on Plaintiff's Exhibit 11-A, and I find the average of the readings in the egg trays at the top 74 feet a minute. Then, taking the vertical section which is shown on 11-C, I find that there are 67 feet per minute average.

Now, your Honor, these readings may have been taken and the readings actually observed. But they were taken—I am not questioning the statement that they were taken and that they were taken with eggs in the incubator, but there must have been some obstruction on the anemometer if these readings are correct because the average should have been at least 80 with nothing in there.

[fol. 360] The Court visited the machine of Smith and we placed an anemometer in one of the passageways between trays and we got a velocity of 60 feet a minute. That is

perfectly possible in one place, because the distribution is not uniform, but should you have gotten that for readings all over the egg chamber, the average would of necessity have come out 80. In fact, it might have been more than 80, because temperature and pressure does come into a very slight extent, and I am assuming now that the quantity of air in cubic feet does not change as it passes through the machine. That is an assumption and not the truth, because it does slightly change, as you put more pressure on it it will get smaller, and if you heat it up it will try to get larger, and if you don't increase the pressure it will get larger. But assuming that the quantity in volume per minute remains constant, the velocity through the egg chambers with nothing in them will be 80 feet per minute from the numbers taken from Mr. Taggart's testimony.

Q. Now, Dr. Greene, let me interrupt you there and ask you if the incubator as shown on Exhibits 11-A, B and C were filled with the eggs that that incubator is supposed to take in operation, what would be the true air speed through the columns of eggs?

A. The truer speed would be 280 feet per minute, the true average air speed. I had assumed the same air speed through the openings between the eggs as in these clear spaces going up. There would not be as much motion through the little egg spaces because of the extra resistance, and consequently I would say that the velocity in the passageway between the columns of trays would be more [fol. 361] than 280 feet a minute. The interesting thing, your Honor, is that if you now apply this lowest section of the Smith patent where the air cannot come up through the spaces between the trays, and has to pass through the egg trays themselves, the velocity would be 500 feet per minute, and it is that high velocity which Mr. Smith is teaching and which you will get if eggs are placed in this machine.

Q. Where do they get the 500 at the top?

A. Because you have more area there. The air can spread out. You see the reason the speed is so high is that the fabric which hangs down between the egg trays prevents the air from going through there. The only place for the air to pass is through the interstices between the eggs, and as a result, since that area is so small, the air has to speed up. As soon as it gets out in a place where there is more area of passage, it slows down. That is always so

element of inefficiency. Of course, you can't help it in a machine like this.

When you get to the very top as I spoke to you yesterday, the part in Fig. 1 beside the No. 22, there you have no obstruction (indicating), and you would then get your velocity of 80 feet per minute before it is sucked over here (indicating).

In this drawing of Mr. Taggart on 11-A he shows a velocity of 160 feet a minute, leaving the outlet which should have been numbered 28. It is seen that that velocity is much higher than the average velocity in the space below figured on quantity and area. The only way in which that higher velocity could be obtained by a drop of pressure or by a persistence of some small stream through that direc- [fol. 362] tion, and because that is marked 160 at that point and the average velocity is 80, it means that there must be a drop in pressure between the atmosphere and the top of the column, so that this machine filled with eggs must be a pressure stream.

Q. Now, proceed, Doctor.

A. Now, in No. 7 each egg in the Smith machine has 2.3 times as much air volume or incubator volume as the James egg. It figures out 16½ cubic feet per thousand eggs. Each egg in the James machine has 3.2 times less the air volume as a Smith egg, 7.1 cubic feet per thousand eggs.

Q. Dr. Greene, what is the significance of that difference between the two machines? Is that a mere matter of proportion or does it have something to do with the inherent operation of these two machines, the one in the Smith patent and the other the James machine?

A. I think it would mean that the machine itself would contain much more moisture, and, therefore, any leakage through walls would have to be protected in the Smith rather than in the James.

Q. As I understand this comparison, in the Smith machine each egg has a considerably larger space?

A. And has more air in contact with it also, which means—and you must not forget this—in Smith it means this large area prevents the variation of temperature and also humidity given out by the eggs more so than in James.

Q. Then, the internal volume of air within the Smith cabinet is several times greater—2.3 times greater per egg

than the volume of air in the James machine? Is that correct?

A. That is correct.

[fol. 363] Q. Now, proceed next test.

A. The Smith machine uses less fresh air than the James machine by 2.2 times less per egg. In the James machine there are 2.2 times more fresh air per egg than in the Smith machine. The rate of exit from the James machine averages 7.46 cubic feet per hour or 177 cubic feet per hour per thousand eggs. That is Part 8.

Q. Now, Dr. Greene, what significance has that comparison in connection with the statement that has been made that the James machine is not a so-called fresh air machine whereas the Smith machine is one that circulates the contained air within the cabinet primarily over and over again? Will you point out to the Court this distinction?

A. This point shows that the James machine handles 220 per cent. of the amount of fresh air per egg as in the Smith machine, and it means that that amount of air is delivered through the outlets, so that there is not as much moisture conservation in the James machine as in the Smith machine.

Q. Proceed with the next.

A. No. 9.

Q. Before you do that, will you tell the Court why it is that there would not be as much moisture conservation in the fresh air type machine of James as in the Smith?

A. Because you are using the same kind of fresh air but handling more of it and delivering it in a more humid condition. The machine which uses more fresh air, therefore, wastes—or not wastes but delivers more moisture.

Q. Let me ask you a question at that point, Dr. Greene. As you understand conservation of moisture it means in simple language the saving of moisture, is that right?

A. Yes.

[fol. 364] Q. And if you pass a large body of fresh air through an incubator you are not, therefore, saving the moisture? Is that correct?

A. Yes, sir, that is correct.

Q. And the amount of fresh air per egg that you pass through the James machine as compared with Smith is 220 per cent. greater? Is that right?

A. That is right. I would like also to point out on the Exhibit 51 the discharge here in James per thousand eggs

per day delivers 5,880 heat units whereas in Smith there is only 3,440. That is the amount of heat delivered in the two machines—in one of them—in Smith 3,440 and in James 5,880. That indicates also very clearly that the James machine does not conserve moisture.

Q. Proceed with the next one.

A. Ninth. The Smith machine places all hatching and incubating eggs in one compartment, the hatching eggs constituting one-fifth to one-sixth of all eggs in the room. There are no hatching eggs in the James machine reducing the heat from eggs 180 per cent. over the Smith method; a part of the James incubation on the 17th day is carried out in the hatcher. I think we have gone over that very carefully.

By the Court:

Q. Proceed with the next one. We have covered that.

A. No. 10. The Smith machine both incubates and hatches in the same cabinet. No. 10, the James machine incubates but does not hatch; the hatching being done in a wholly separate structure placed at a convenient location and when hatching there is no mechanical agitation of air. [fol. 365] No. 11. Smith has defined current; must have currents with forced draft to get through the long egg column.

James has no current; churns the air before it goes into the eggs.

Mr. Toulmin, Jr.: At that point, let me offer this stirrer of the James machine which we have been referring to as our Exhibit No. 53.

(Stirrer of James machine marked Defendants' Exhibit No. 53.)

Q. What is the effect of the air mixer or stirrer in the James machine such as was just marked Exhibit 53 in connection with the air, both cold and warm, which is entering the bottom of the egg chamber in the James machine?

The Court: Haven't we gone over this?

Mr. Toulmin, Jr.: I just want him to make a brief statement here, and then I am going to demonstrate that to you.

The Court: I think he has already answered that question,—at least the substance of it before.

Mr. Toulmin, Jr.: Then, if your Honor understands, I will withdraw it.

A. The stirrer receives the air coming from the channels both front and back, and the air coming in through the openings from the outside beneath the stirrer and churns those, destroying any kinetic energy in the direction of the discharge from the side currents, so that the air after being [fol. 366] stirred by this device enters the lower part of the egg chamber in a turbulent condition.

Q. Now, proceed with the next?

A. The Smith machine arranges the eggs with the hottest eggs at the bottom of the column and every time fresh eggs are inserted, all of the eggs are moved downwardly to a new position so as to keep the hot eggs always on the bottom, of the column.

Q. Is that James or Smith?

A. I may have said James. It should have been Smith. Under the James, No. 12, James arranges eggs in sandwich form so that there is no predetermined order of the eggs. The eggs are never moved after they are once placed in the machine. The James eggs are preferably arranged so that the hottest will not be at the bottom in order to prevent the hottest air and the hottest eggs being at the same place.

Q. Now, pass to the next.

A. 13. Smith moves his egg trays by lowering to a different position at intervals. 13. James does not move his trays.

14. Smith tilts a part of his trays.

14. James never tilts his trays.

Q. At that point, James rotates those cradles; is that correct;

A. He rotates the cradles but not the trays.

15. According to the Taggart chart, the hatching eggs give off much more heat as all of the rest of the eggs in the first eighteen days—the hatching eggs produce half of the total heat.

Q. On the James side——

A. Under the James side, as James eliminates the hatching eggs he eliminated 64 per cent. of Smith's heat so that he does not have to meet the problem of conservation of [fol. 367] moisture for the eggs that are hottest and must have the most moisture conserved.

No. 16. The hatching eggs require a larger proportion of moisture than the incubating eggs in order to prevent the drying out of the hatching eggs due to their high heat and due to their need for excessive moisture to provide mechanical lubricant so that the chick can detach itself from the shell.

16. Under James, James eliminates the hatching eggs from his incubator and therefore does not have the problem of conservation of moisture.

17. The Smith temperature recommended in the Instruction Book is 99 degrees.

17. James carries the temperature in his incubator at 100-½ degrees and in his hatcher a temperature of 102-104 degrees.

18. The humidity in the Smith machine is maintained at 88-90 degrees per the Instruction Book (Page 5) when hatching, which is continuous.

No. 18, James. The humidity in the James machine is maintained at 82-85 degrees in the incubator and large water pans in the hatcher with no control of moisture.

I would like to say, your Honor, that the term "maintaining humidity at 88-90 degrees" means that when we put in a wet bulb thermometer it will reach this temperature, which is a term used in practice, and is mentioned in the Instruction Book of Smith and also of James.

19. The Smith machine is under pressure. The pressure equivalent of air movement of about 490 feet per minute, or eight feet per second, or about six miles per hour.

[fol. 368] 19. The James machine is under suction because the stirrer evacuates the air adjacent the outlet openings. This sub-atmospheric condition is about .019 below atmosphere measured in inches of water while Smith is 0.14 above atmosphere.

20. The air delivery in the 47,000 egg machine at Buffalo, which we are going to show the Court, is 1,600 cubic feet a minute and in the Grand Rapids Smith machine it was 2,790 cubic feet per minute per fan. In the four-fan Buffalo machine this is 6,400 cubic — per minute.

20. James air volume delivered is only about 878.8 cubic feet per minute.

21. The Smith machine hatches because the hatching chickens are kept at the bottom and there is no moving means to injure the chicks if they fall out of the trays at

the bottom. That is, Smith has his trays down at the bottom hatching.

21. James cannot hatch in the incubator because (a) chicks would fall into the turbulator and be killed; (b) there would be too much heat; (c) they would foul the other eggs as they hatched; (d) the egg turning mechanism cannot be rendered inoperative for those trays not used for hatching; (e) transmission of diseases; (f) you cannot control the moisture conditions to suit both the incubation and the hatching operation.

No. 22. Smith conserves moisture because he must prevent the hatching eggs from drying out. Smith must conserve moisture because he handles a relatively large volume of air per egg which tends to dry out the eggs. Smith must conserve moisture because, by keeping the hatching eggs [fol. 369] with the incubating eggs, he adds 180 per cent. additional heat. Smith must conserve moisture because he has a forced draft machine that handles a large volume of air at high velocity.

22. James does not set up the condition of 180 per cent. extra egg heat and does not require the extra moisture due to hatching in the cabinet and does not have a large volume of hot dry air but, to the contrary, James uses a large volume of outdoor air that is laden with moisture and provides an unlimited amount of moisture in the cabinet. James has neither the reasons for conservation of moisture nor the means of retaining the moisture as James uses 2.2 times the fresh air of Smith and therefore could not conserve moisture.

23. Smith must use the corridor when employing large numbers of eggs because it would take so much time to shift his eggs if he left the door open that the eggs would become chilled and, as the machine is a pressure machine, the pressure in the interior of the cabinet would blow the hot air out.

23. James machine needs no corridor because the small number of eggs requires a limited time to insert new eggs and take out the hatching eggs:

That means of course, the eggs to go to the hatcher.

There is no movement of the eggs from one place to the other in the incubator. James machine is a suction machine and therefore, even though it operated it would not be injurious to keep the doors open; the operator of the James

machine does not have to go into a wet, humid and hot atmosphere to work.

[fol. 370] 24. Smith provides 16.5 cubic feet per thousand eggs.

24. James provides 7-1/10 cubic feet per thousand eggs of net air volume.

25. Smith has eggs arranged in a closed chamber with restricted openings to the outside air because his egg chamber is always at a pressure above atmospheric pressure.

James has no restricted openings to the outside in his egg chamber; and no exhaust openings of any kind from the egg chamber to the outside as the egg chamber is under subatmospheric pressure.

No. 26. The pressure velocity through the egg spaces is 148.8 feet per minute with a 2790 cubic feet fan.

James 26, the suction through the egg spaces is 47.5 feet per minute.

No. 27. The Smith fan turns at 1750 r. p. m. with blades angled to drive the air in one direction only.

Q. Your Honor, at that point, as I understand it, Smith's fan,—we have one here,—turns over about 1600?

A. That is right.

Q. And they range on from 1600 to speeds up higher than 1750, depending upon the machine?

A. Yes. 27. James evacuator and stirrer at the top of the machine turns at 860 r. p. m.'s and has flat blades churning air in all directions.

Q. You are referring in that to the impeller, Exhibit No. 50, is that right?

A. That is right.

The Court: I think we better adjourn at this time until two o'clock.

Recess until 2 P. M.

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[fol. 371] After Recess 2:00 P. M.

ARTHUR M. GREENE, JR., resumed:

Direct examination continued.

By Mr. Toulmin, Jr.:

Q. Will you continue with your statement, Dr. Greene, in connection with your comparison and complete that?

A. No. 28 is the reasons why Smith must conserve moisture. (A) His conditions demand conservation: 1st. He has a forced draft tending to dry out the eggs. 2nd. His hatching eggs give off as much heat as his incubation eggs in a mass. 3. The hatching eggs demand extra moisture. (See Smith Instruction Books saying increase of moisture is necessary.) 4. Smith operates at lower temperature than James and therefore requires more moisture. He has to operate at a lower temperature. He has the hatching eggs which necessitate a lower balanced temperature. (B) The steps to conserve moisture by Smith: 1. Restricted air outlet openings. 2. Runs a lower temperature than James. 3. Circulates his air; uses less fresh air. 4. Has a large body of air for each egg compared to James. Has a larger carrying medium per egg for moisture. 5. The use of a corridor in which the operator may work without opening up the machine so that moisture will not be lost—the corridor is a moisture conservation instrumentality.

28, under the James column gives the reasons why James need not conserve moisture. (A) His conditions do not demand it so there is no need of it. 1. There is no forced draft. 2. The hatching eggs are not in the incubating cabi- [fol. 372] net. The elimination of the higher temperature eggs reduces the necessity for moisture in the James machine by not hatching in the James incubator. 4. There is no necessity for large quantities of moisture because the hatching eggs that need the most conservation are not in the cabinet. (B) Steps by James not to conserve moisture: 1. The use of 2.2 times more fresh air than Smith. 2. The use of 2.3 less space per egg than Smith so that a large volume of hot air is not continuously circulated per egg. 3. There is no blast or air circulation as in Smith, but merely a gentle motion.

Q. You mean suction?

A. Suction. 4. When the doors are opened any moisture in the machine is not conserved but lost. 5. The machine of James is insulated by the hollow walls on the sides and ends so that there are no severe heat losses.

Q. Before you pass to the next numbered paragraph, will you go back to the Smith column at the bottom, under B-5 and tell the Court what you mean by the corridor being a moisture conservation instrumentality?

A. I mean by that, your Honor, that this large volume of moisture in the large volume of air is present to be used later as a circulator, and also the walls of this machine are made tight and the door tight to keep that air from leaking out.

Q. Now, if you will go to 29.

A. 29, under the Smith column: Smith delivers a single current of air driven as an unbroken body under pressure through the long egg columns. 29. Under James: James brings two pairs of opposing hot air streams to a point be- [fol. 373] low the single short egg chamber and introduces four streams of cold air into the hot air streams and then mechanically turns all of these streams to prevent any current of air being formed and lets the cooled air thus produced rise under suction. (30. Under Smith: Smith has hottest or oldest eggs in same chamber with all other eggs: And arranges eggs in order of heat, always keeping hottest eggs below colder eggs to transfer heat to the colder eggs as the forced draft proceeds from the oldest eggs to the cooler eggs. Smith's air changes at every circuit it makes because new fresh air is introduced at each circuit and a part of the old air is released together with the heat it contains at each circuit: Therefore, to get heat transfer each circuit of air being different from the preceding circuit he must arrange his eggs in a predetermined order to get a heat transfer from the hottest eggs to the cooler eggs. 30. Under James: Heat from the hottest eggs in James cannot be carried to the cooler eggs because James does not have the hottest eggs in his incubator, such eggs being only in the separate hatcher: And such eggs as are in the incubator are not arranged in their order of age, but are irregularly arranged. In James more heat is extracted from the air to vaporize water and warm the fresh air entering than is given off by the eggs. Hence egg heat is not returned to the chamber. The heat returned is that taken up from the heating coils.

Q. That is what you were referring to this morning when you started to testify?

A. Correct.

Q. Now, Dr. Greene, with reference to the James machine, do you find in the James incubator any method of [fol. 374] hatching practice?

A. I do not.

Q. Will you state why not?

A. The hatching is done as called for by Smith—he distinctly speaks of the hatching part—in a separate and independent structure which has no heat or moisture or air connection with the incubator proper. In fact, it may be built without physical contact as a separate piece of apparatus in another part of the room, but it is in a separate box absolutely independent from any of the air circulation within the egg chamber.

Q. Now, Dr. Greene, the James incubator, do you find in the sense of the Smith patent a plurality of eggs arranged at different levels in a closed chamber?

A. I do not so find.

Q. Will you state why not?

A. The different levels of Smith as I explained to the Court earlier in discussing the patent, does not mean or does not have the connotations of the ordinary different level, but it means the levels discussed by Smith, which I have called levels 1, 2, 3 and 4; the first one being the fresh and stationary level; the second, the used levels which cover ten days in the tilting racks; the third level where he forces the air through at a speed of 500 feet a minute, and, finally, the fourth level which is the hatching stage. Different levels in this patent distinctly mean, in order to carry out the teachings of Smith, levels arranged with the coldest eggs at the top and the hottest eggs at the bottom, provided the current of air travels upwards.

Q. Now, do you find in the James incubator an egg chamber comprising the closed chamber having restricted open- [fol. 375] ings of sufficient capacity for the escape of foul air without undue loss of moisture?

A. I do not so find. The outlet in the James machine is in a high pressure chamber, whereas the eggs are in a suction or low pressure chamber.

Q. And do you find any restricted openings on that low pressure chamber as an outlet for escape for foul air?

A. There is no outlet in that chamber for the escape of the foul air, of restricted form. There is a passage into the impeller through which all of the air passes.

Q. Do you find in the James incubator a current of heated air in the sense of this Smith patent?

A. I do not find a current of heated air in the sense of the Smith patent by any means.

Q. Will you explain why?

A. As will be shown later, your Honor, the speed of progress as required by Mr. Taggart in the high velocity part of the egg cabinet—that is, over the vertical lines made when you tilt the racks—is 139 or 140 feet per minute. This is not a high velocity, and years ago Carpenter said that such a velocity was hardly perceptible; but that does not come into this picture quite. If we now go to the Smith patent and the tests made with 6,000 feet of air going through per minute, we find that the velocity in the clear space is and must be on an average of 280 feet of air per minute. Now, if we compare 140 to 280, we find that this velocity of progress in James is half as great as that in Smith, but since it is velocity head in many cases which affects the friction and thickness of film and impact, we would have to square that one-half, and so we would find the effect of the speed of progress as defined by Mr. Taggart in the James incubator, when referred to what must [fol. 376] be taking place in the Smith machine as an average we find that the effect is one-fourth as great as when expressed as velocity head. Moreover, as I said this morning, when you get down to the bottom sketch in Taggart the tilting rack, you find that part which is sealed off the cabinet room, shows that that speed of progress is 500 per minute to have these currents as Smith calls for, but I should say there are no such currents in the James machine.

Q. Aside from speed in this same subject of current, it is quite customary in ordinary language, Dr. Greene, to refer to any air moving any way as a current—that is a colloquial term, is it not?

A. Yes.

Q. Now, should we determine the Smith patent in the sense of any piece of air moving in any direction as a current, or does it have some special meaning in the Smith patent?

A. I think in the Smith patent it means currents which are defined, and along these paths the air progresses with a more or less uniform motion in lanes, distributed, of course, through the chambers.

Q. Now, do you find such an arrangement or such an operation of a defined body of air moving as a current of air in the James incubator?

A. As shown by the results of Mr. Taggart's tests I do not find such current.

Q. You are referring to Mr. Taggart's Exhibit 24 with the red marks on it?

A. I do. If you take for instance the top sheet which is marked Tr. y 10 from the bottom and note the distribution of the movement as recorded by the anemometer, it is seen that the velocities of these air movements at different parts [fol. 377] of this level are quite different, meaning that there must be some cross currents because of the change in energy due to velocity at these points. Then, moreover, of you compare, let us say, the next sheet No. 9 with No. 10, we find that the velocities indicated are quite different in similar positions in the tray, which means that as it progressed through these vertical channels there is a change in velocity, which means that there is not a persistent stream; if there were, these velocities would be more nearly alike. It shows very clearly that at various speeds there is not the chance for persistence from one level to another as you would get in the currents that Smith describes.

Q. What kind of motion would you say there is going through inside of the James egg cabinet?

A. I should say it was a turbulent changing motion, possibly with pulsations in it, and, as was seen from the lower trays, there is a certain amount of curling around.

Q. And what instrumentality in the James machine causes this turbulent and pulsations?

A. I think both instruments, both the impeller at its low speed and its limited number of blades, and the stirrer at the bottom both contribute to this motion. I would like to call the Court's attention to one thing on these sheets. Your Honor, the average velocity for the ten trays as indicated on the top sheet of Plaintiff's Exhibit 24 is 135.75 —of course, this is feet per minute. Now, it happens in this machine, Mr. Taggart said, that there was 500 feet of air per minute passing through—that or more, he did not state how much more—but using that amount of 500 as I did this morning with the 6,000, and dividing that by the [fol. 378] cross-sectional area of these chambers, we know that the trays or eggs in them—that area I have figured at 1,055, but for quick calculation if we say 1,000 it is near enough to the truth—500 divided by 10 would mean 50 feet per minute. Now, the air is speeded up to 135 because the

full area is not open to the air passage. We are now assuming the air to be a fluid of fixed volume. Mr. Taggart very nicely explained how that would happen in a river, in a stream. Let us take the lake here. We hardly know that it is moving, and when that same water gets into the Niagara River, and especially into the gorge, it travels at an enormous speed because the same quantity has to pass through a much smaller area. So in this the result is one that you would expect; that is, the average velocity, if there were no restrictions, would be 50. Here it is 2.6 times that much because we have over 2.6 times the area to pass the air. Now, it is that some relation which I used this morning in order to get the 500 feet per minute in the eggs at the bottom of the tilting racks of Smith, or 280 in the upper level.

Q. In other words, you are applying the same principles to Exhibit 11-A, B and C to Taggart as you are applying to Exhibit 24?

A. Exactly.

Q. And when you apply the same principles and methods then Exhibits 11-A, B and C is in error as to its speed?

A. Yes, sir.

By the Court:

Q. How do you explain these readings then?

A. The average quantity, your Honor—the average on each sheet is about the same. Now, it indicates that the [fol. 379] method used throughout the test at each level was a similar method and led to one result, which mean result is one that might be expected. I did not compute the amount of clear area in James. I could do that.

By Mr. Toulmin, Jr.:

Q. Let me ask a question, Dr. Greene. I don't think you heard the first part of his Honor's question. The Court wants to know whether in Exhibit 24 you agree with Taggart's figures in Exhibit 24—that is what the Court wants to know.

A. I agree that we take them, your Honor, and they are readings which would be expected, and from them you can interpret them as I already have. I have not made the test, your Honor; I have not tested the anemometers, and I could only use the figures for what they are worth.

Q. Your average would be a little less on that basis—the speed average.

A. No.

Q. Your computations would be a great deal less?

A. No. The average, without any eggs in there comes a great deal less; but putting the eggs in, speeds the air up to the reading which Mr. Taggart gets; that is, without any eggs in there or any trays, 500 feet would have the velocity passage of 50.

By the Court:

Q. That shows a velocity of 135?

A. Because he has restricted the area by putting eggs in there, and therefore it is a correct answer in form.

[fol. 380] Q. I am not sure. Does this show whether eggs were in or not?

Mr. Ely: No. These were made with eggs in the tray.

A. The test was made with the eggs in. We saw the device which he tested.

Mr. Toulmin, Jr.: Your Honor, here is a tray with eggs. This is one without eggs, but said to be eggs, and the only explanation of this, to make this figure right, would be to consider it without eggs. That is what he was bringing out.

Q. Now, Dr. Greene, in James the defendants' machine, as you testified this morning, you found no means for conserving moisture for the reasons you have already stated?

A. That is correct.

Q. Do you find any means in the defendant machine, by using a current of air of sufficient velocity to circulate, diffuse and maintain the air throughout the egg chamber at substantially the same temperature—that Smith in his patent is using that idea?

A. No, because in the Smith Patent the process is from the hottest eggs to the coldest. In James there is a distribution at random of the eggs. So if Smith by his method can do what he claims to do, James cannot do so.

Q. And, as I understood your testimony this morning, the units of heat will not be carried from the eggs in the more advanced stage of incubation to those of less advanced incubation, by the James machine because he has no mechanism or arrangement for that.

[fol. 381] A. Not only that, but he does not keep his hottest eggs in the device; so those are missing entirely.

Mr. Toulmin, Jr.: Now, your Honor, I am at the conclusion of the first chapter. We are ready to show our machines and the prior art machines. Our whole group of machines is next door. If your Honor will indulge us for a few minutes, we can step over there and look at them, that will shorten up the testimony very materially.

(Recess from 2:35 to 3:40 P. M.)

Q. Dr. Greene, we have just returned from a demonstration of the Smith machine, the defendant James machine and certain prior art machines, that is correct?

A. That is correct, sir.

Q. I have here a set of photographs and I first hand you a photograph so that we can identify that, and I ask you to state what that is?

A. This photograph is a photograph of a Smith machine, the inside dimensions of which are approximately 12½ feet long, 9½ feet wide and 7 feet six inches high in which there were 24 columns of egg trays, each column containing 12 trays, the tilting form, and two trays for the hatching stage below the tilting trays.

Beside it is a James incubator holding 4,200 eggs.

Mr. Toulmin, Jr.: We offer this in evidence as our Exhibit 54.

(Photograph of Smith machine marked Defendants' Exhibit 54 in evidence.)

[fol. 382] Mr. Toulmin, Jr.: That is a photograph of the exterior of the Smith machine and the James incubator. Mr. Ely, I don't suppose there is a dispute between us that that is the Smith machine that we saw over there a while ago?

Mr. Ely: No.

Q. I hand you three photographs, Dr. Greene, and ask you what they show in connection with our recent demonstration?

A. These photographs, four in number, which I shall mark A, B, C and D, are photographs which show the internal arrangement of this machine. In Photograph A, the ceiling is shown with three of the fans in their normal posi-

tion, and the fourth fan swung down. At the end of the corridor which is shown in this figure and which is really this whole picture—at the end of the corridor, above the fan you see certain of the pipes used for warming and humidification at the side of the picture is shown the canvass walls which determine the corridor dimensions, and on the right-hand side of the picture is shown the chains which support the tilting racks or trays.

Q. You need not go into great detail with these photographs.

A. The second picture B shows the exterior, with the door open, leading into the corridor, showing the size of this door. The picture C shows the corridor again with the door open, and a man standing inside with his hand on the tilting trays. The picture very clearly indicates the stationary trays for hatching at the bottom. And the photograph D again shows the exterior with the door open and a man standing in the corridor.

[fol. 383] Mr. Toulmin, Jr.: We offer in evidence these photographs as a single exhibit, "A", "B", "C" and "D".

The Witness: The letters "A", "B", "C" and "D" are arranged in order of the pictures coming there.

(Photographs marked as one Exhibit, Defendants' Exhibit 55, "A", "B", "C" and "D" in evidence.)

Q. Now, Doctor, did you witness a test that was conducted before his Honor and the parties on both sides, in connection with the pressure that exists within a Smith machine? Will you kindly describe what was done to the Smith machine to make this test, and briefly what was the test and the result of that?

A. The machine was brought up substantially to temperature, 99 degrees, and an endeavor was made to get the humidity correct.

Q. Was it correct?

A. The humidity I think was a little low on that test. I think the wet bulb showed 80 degrees, and I think they usually run a little higher than that. The attempt I think was to get it at the proper humidity to show the Court what really was the condition within the incubator.

Q. The Smith humidity runs from 88 to 90 during the action?

A. Yes.

Q. 85 during ordinary times?

A. 88 to 90 is the condition which I remember for the wet bulb. The Smith machine test had an inlet opening ten inches in diameter around, and four outlet openings, substantially rectangular, a little over six by six inches. The area figures out 78½ inches for the inlet area, and 162 [fol. 384] inches for the outlet. Now, with this condition, and the machine running without eggs, we opened up holes in the side and put a candle in front of these holes to show whether the air would be blown out or sucked in. If it were blown out, as it should occur, it would indicate a pressure condition. If the candle flame had been sucked in, it would have indicated a sub-atmospheric pressure. In all cases the candle was blown out and the condition was not quite the operating condition, because no eggs were in the machine.

Q. Would that operate better having less blown out or more out?

A. I think the opening No. 3 would show considerably more blowing out, No. 2 a little bit more and possibly No. 1 a little bit more.

Q. I hand you a set of photographs and ask you if they represent in substance what we saw this afternoon in the ones you examined here through these test holes in the sides of the Smith incubator?

A. They sustantially represent what we saw.

Q. I notice that there are three numbers: Smith No. 1, Smith No. 2 and Smith No. 3. Do these photographs indicate the openings and the candle at each opening?

A. Yes, No. 1 top, No. 2 middle, No. 3 the lower one.

Mr. Toulmin, Jr.: We offer them in evidence as our Exhibits, No. 56-A, B and C.

(Photographs of Smith Incubator marked Defendants' Exhibits 56-A, B and C in evidence.)

Q. And these three photographs, Dr. Greene, are those three openings marked in the side of the machine with [fol. 385] tags Nos. 1, 2 and 3?

A. That is right, I understand so.

Q. Now, did you observe similar tests made on holes on the side of the James machine that we observed, and holes communicating with the incubation chamber—the egg chamber?

A. I did.

Q. Will you describe what was the result of those tests you made?

A. The incubator of 4,200 egg capacity was filled with eggs in all four of its 20 trays, the stirrer and the impeller were in operation, and then a series of holes placed through the side of the incubator and leading to the egg chamber were opened, one at a time, and a candle placed in front of those holes. In all cases the candle flame was drawn into the hole indicating a condition of sub-atmospheric pressure within the egg chamber.

Q. Was a similar test made of the James machine, with the trays in position and without eggs?

A. Yes, sir.

Q. Was there a material difference in result other than that the flame was sucked into the opening?

A. I think there was a slight difference of result indicating that the suction at the top and bottom were more nearly alike than they were when the eggs were in there. The suction was quite different at the top than at the bottom, because that was nearer the fan, and the resistance of the eggs had to be overcome.

Q. Have you any photographs here of the tests showing the results of the tests we just saw this afternoon on the shop floor?

A. I have three photographs showing the condition at the top opening, at one a little lower down, and finally the suction of the air at the bottom opening near the bottom of the egg chamber.

[fol. 386] Q. Do these photographs correctly represent in substance what we saw this afternoon?

A. They do in substance represent that.

Mr. Toulmin, Jr.: We offer this in evidence as our Exhibit No. 57.

(Three photographs marked Defendants' Exhibits 57-A, B and C in evidence.)

Q. Now, Dr. Greene, did you observe any other test in connection with this James machine, and will you describe what that test was, so that we have it on the record?

A. We removed two of the egg trays from the left-hand egg cabinet, and the two lowest trays, and then introduced smoke into the lower part of the egg chamber, while the

impeller and stirrer were at rest. The smoke from a cigar was blown in by means of a little fan blower and appeared to ascend in a column, striking the trays a little higher than the entrance point, it curled over and began to fill the lower chamber.

Q. At this point were the stirrer and impeller at rest?

A. They were at rest. The column of smoke was rather continuous. At the proper signal the stirrer was started, without the impeller being started, and in a very short time—I would not say instantaneously, but it was so rapid that it was almost instantaneous—the smoke in this lower part of the egg chamber was diffused and turbulated so that it appeared as a uniform color. The appearance was quite marked as the impeller started to strike this column.

Q. What would you say the effect of the stirrer is on the air in the bottom of the James egg cabinet in the light of this demonstration?

[fol. 387] A. Speaking of the air which enters through the openings below the impeller, I would say that the impeller mixes this quite thoroughly in the chamber below.

Q. Now, did you see a similar test conducted with both the stirrer and impeller at rest, the smoke being introduced in the normal air inlet openings, and then both of these air moving instrumentalities set in motion simultaneously?

A. Yes, I did, and again the same observation was made in the lower part of the egg cabinet: That it was thoroughly churned and mixed, and there was no appearance of the side currents of air, if they could be called currents, or deliveries of air, at the velocities which they have in that cabinet, being carried up in the egg chamber. The two discharges from the side appeared to meet the stirrer itself and the currents from the stirrer, and the total amount of air within this lower part was churned, and there were no direct lanes or currents of air seen in the egg chamber above.

Q. Were they streaks in this chamber or was the distribution of smoke homogeneous?

A. To me it appeared homogeneous.

Q. What would that lead you to believe on the question of this current defined in the Smith Patent?

A. There is no such current as defined in the Smith Patent.

Q. That is your judgment as an engineer?

A. That is my judgment as an engineer. We also noted a discharge of this smoky air from the four small holes used as outlets from the chamber in which the impeller turns. The chamber confined by the top and bottom blades, called housings by Mr. Taggart, and the square side of the [fol. 388] box, with the water passed within it, and the obstructing water pipes, the air here came out, it was quite evident, and there was a pulsation to that air, which seems to me to indicate that the churning action of this impeller is not that—I think this is a very good test to show it, by the way—that the discharge from that impeller is not a steady stream, as would appear on a true fan with its proper form of casing. This large box in which the impeller is placed allows the blade, as it goes across in front to discharge its air.

Q. In front of these exit openings?

A. The exit openings. And then when it passes beyond the back of the blade, which is a place of sub-pressure—not atmospheric that would possibly suck it back again. It may also be due to the fact that there is such a true churning action in there, that you have that outlet and inlet which caused the pulsations.

Q. Did you see the candle held in front of the right-hand openings and was that candle, as long as it was lit, a steady flame or a pulsating flame?

A. It was a pulsating flame, and it was sucked in at times; at other times it was pushed out, and I think such a condition would probably exist through the machine. I think this is an indication, in one way, of the pulsating action through the whole machine.

Q. That is caused by this type of impeller or stirrer, with the flat blades, that sweep out of these outlet openings, is that correct?

A. Yes.

Q. And that instrumentality is Exhibit 50?

A. That is right.

Q. Now, Dr. Greene, do you recall any other tests were [fol. 389] made besides these? We next examined the prior art machines?

A. I was going to say, before leaving these two machines we called the attention of the Court to the hatching section which can either be an independent structure standing on its own legs, or placed on top of the incubator. We exam-

ined several devices of the prior art which had been used as incubators. One of these was that to Proctor, No. 553,723. Another, following the teachings of the patent to Schwartz, No. 535,175. Another to Goldstein, No. 1,137,752, and, lastly one built in acordance with the teachings of the incubator of Stulik, No. 155,917, of 1901 German. We also looked at a fan of high velocity, of high speed, which was set up for demonstration.

Q. Did you examine these photographs that I hand you in connection with the prior art machines that were in the demonstration room?

A. I have examined all of these photographs and find them in accordance with the teachings of the patent. The only part of the photographs with which I am not familiar are those showing hatched eggs and incubating eggs.

Q. You can disregard those. We will identify those later.

A. But the other pictures are in accordance with the exhibits.

Mr. Toulmin, Jr.: I offer them now as a single exhibit, Exhibit No. 58.

(Photographs marked Defendants' Exhibit No. 58 in evidence.)

Q. Now, Dr. Greene, while we are fresh on these particular machines, I would like to have you discuss these patents, before doing so, to facilitate a discussion of them, I [fol. 390] have here a booklet, photostats of these prior patents, your Honor. Will you look at those, Dr. Greene, and tell me whether those are correct photostats of the prior art patents and publications you are going to refer to?

A. Those are the correct ones. I have checked the patents, and they correspond, and I have also checked the drawings of the old English Book over almost 200 years ago, explaining this incubation of eggs.

Mr. Toulmin, Jr.: We offer this illustrative book in evidence.

(Booklet of photostats of prior art machines marked Defendants' Exhibit 59 in evidence.)

Mr. Toulmin, Jr.: Your Honor, before we start on this, I think I better make an offer in connection with some of

these machines we saw this afternoon. The Smith machine I did not offer because it belongs to Mr. Cory for demonstrating purposes.

The Court: Do you claim there is any essential difference between that and the best machine?

Mr. Toulmin, Jr.: Except that is an older type of machine. I don't see any essential difference between them. For the purpose of demonstration, that is all we needed it for. We have photographs of it here already offered in evidence.

The experimental machine—by experimental I mean the one we made experiments on, the James with glass windows, I would like to have that identified so that the Court of Appeals can identify it. Identify it as Exhibit No. 60.

[fol. 391] Now, these prior art machines I would like to offer in evidence—and they may be stored for the Court of Appeals if your Honor so desires—as our exhibit: The Proctor machine which was the first one we looked at, to be known as our Exhibit No. 61; the Schwartz machine to be known as Exhibit No. 62; the Goldstein machine as Exhibit No. 63, and the Stulik machine as Exhibit 64. We will have photographs of those.

I would like to offer in evidence that series of fans, the last one, your Honor, where you stood on the platform, as Exhibit No. 65.

Q. Now, Dr. Greene, if you will turn to either of your patents, or this folder, and go through the pertinent prior art patents that you think have a bearing upon the Smith Patent and upon the method of Smith bringing out those elements that would be of value to the Court in determining the scope of Smith and its validity? Will you please proceed, first taking the German Patent to Stulik No. 155,917?

A. The Stulik Patent 155,917 of 1901, German issue, teaches, quoting from the translation on the first page, "That heretofore uniform temperature throughout the incubator space had not received sufficient attention." He then goes on to describe, on his first page of the translation, that the individual egg carriers are either shifted latterly, one after the other, at certain intervals, until they have passed through the entire hatching stage, or a series of egg carriers, in which the eggs are to be placed at different [fol. 392] times, arranged below a hot water boiler, and

during the hatching time each egg carrier separately is placed a suitable distance from the heating boiler.

If you will look, your Honor, at 62.

Q. You are now referring to O——

A. The first figure on the large chart; and Stulik shows in this the heated air which entered at C in Fig. 2, passes over the series of trays B, leaving at the top D of Fig. 2. He has in front of these trays a large door G which may be opened for the moving of the trays, and then each tray has its small door F. The part below, at the lower part of B is the so-called brooder, which does not enter into this problem.

Stulik here places his eggs of earliest date, earliest age, youngest eggs, so that they will be bathed with the fresh air, which normally is hotter than those eggs.

Reading from page 2 of the translation, we find the following:

"On the other hand, and in accordance with the invention under consideration, the batches of eggs entered into the hatching space at different times are always directly exposed to one and the same hot air current in such a manner that the batches of eggs are removed progressively or in stages in the direction of the hot air currents from the source of heat, so that the individual groups finally have passed through the entire hatching space. In this way it is made possible that the fresh batches first entered in the hatching space are exposed to the full heat of the hot air [fol. 393] currents while the older batches of eggs which have already been shifted ahead in the hatching space are only exposed to the hot air current after the same has already given off a part of its heat. In this way it is made possible that, under due consideration of the natural heat developed by the eggs during the advanced stages of hatching, a uniform temperature prevails in all compartments of the hatching space, in as much as in the sections on top or along side the heat of which the warm air current is deprived is replaced by natural heat of the eggs. In this manner it is prevented that the older batches are exposed to an excessively high degree of heat."

That is, he teaches here, your Honor, that by bringing fresh air in this chamber, which has been brought from the

outside, you bathe the early eggs, which are cool, with this new air entering——

Q. Is that warm air?

A. How is that?

Q. Is that warm air?

A. That is warmed air. It must be warmed because of the source of heat below. Then, as it gives up its heat, it becomes more proper for the hotter eggs.

Now, Stulik here recognizes what Dr. Smith has recognized, that there is a difference in heat production between early eggs and late eggs, but his philosophy is just the opposite. He is not trying to conserve heat, but he is trying to hatch eggs in stages with the proper kind of air baths. The air, after it leaves the top of this is discharged, in the picture, into the room, and in the picture shown there is [fol. 394] no reason why that heat, or some of it, couldn't be returned to the device.

I have spoken of fresh air entering, which means that the air which is warmed by passing up through pipe C of Fig. 2 is introduced into this chamber. The air which leaves at the top D has received the heat of these eggs in the last stages of incubation; but Stulik was aiming to care for this difference in heat in such a way as to get, by stage incubation, a uniform temperature, or more nearly uniform temperature throughout his egg treating space.

The Court: Does C extend up into the incubating part?

The Witness: Yes, sir, C extends above the bottom of this chamber, and the whole thing is surrounded by water, your Honor, which is heated to maintain the heat, and the air which passes through the pipe C is heated by the gases around it. That is, there is the heating device off to the right of Fig. 1, marked K, and the gases from that heating device enter and pass around the air pipe C and heat the water jacket; and then there is a thermostatic control which regulates temperature, as was ordinary at that time. I would like you to realize, however, that this patent was taken out in Germany in 1901, and recognized some of the factors and advantages of stage incubation.

Q. Let me ask you a question, Dr. Greene: In this Stulik egg cabinet, we have eggs of different ages, is that correct?

A. We have.

[fol. 395] Q. And the eggs of different ages are used for the purpose of having the heat from one stage communi-

cated to another stage, is that correct, as the air moves through?

A. Yes.

Q. And after the air passes out the top of the machine into the room, the only air that can return to the machine is room air, is that correct?

A. That is correct.

Q. And the air, therefore, that is passed out of the top of the machine, after having passed in one circuit over the eggs in different stages of incubation, will go around when it cools, and drop to the floor, and then return through the inlet pipe where the air is again heated and discharged in the egg compartment, is that correct?

A. Yes.

Q. And is there, in that sense, a continuous stream or cycle of air through this machine?

A. In this machine——

Q. Is that correct?

A. That is correct.

Q. And the difference between this and Smith is only in the fact that Smith provides a compartment associated with the box but separated by a partition, whereas in this machine, the machine uses the room as the return path or corridor through which the air returns for another cycle, is that correct?

A. That is correct.

Q. And a person, could, of course, walk in this room in the same manner that a person walks in the Smith corridor, is that correct?

A. Yes.

Q. And a person walking in the room would use the room for the purpose of loading and unloading the incubator, is that correct?

A. That is correct.

Q. Now, will you pass to the next patent that you think [fol. 396] is of interest?

A. Mr. Toulmin, might I ask if you would prefer me to follow the pictures on each chart?

Q. I think you had better; it is in the nature of a chronological picture, almost so.

A. Would you give me the next one that you would like me to discuss?

Q. Guerin 3019 of 1843, egg hatching apparatus.

A. This, your Honor, is a patent to Guerin No. 3019 of 1843, and it is for a large sized incubator. On page one of the patent in line 74, he states that it is used for the artificial hatching of 7,500 eggs, and to rearing the chickens from the first month of its existence. In the first figure of the two shown here, we had a longitudinal section of eight arrangements of trays and three trays high. In the second picture on this chart, a cross-section is given, and over at the right, it is very evident that the trays are placed one above the other. This is not intended for stage incubation, but it is arranged so that eggs in the lower trays by ascending natural draft currents, will contribute heat to the upper eggs, if there is a difference of temperature.

The egg trays are heated by pipe coils which are shown in the right hand picture by the three circles over each tray.

An arrangement by Guerin cares for the chicks when they are about to hatch out by withdrawing the drawer a short distance so that they can get through to the front for air, and learn to appreciate a particular color which he hangs in front of the little door, so that after when they are placed in the chicken yard during the first month of their existence as chicks, they can enter these small brood-[fol. 397] ing cabinets which have the same colors hanging in front and will not get mixed up too much.

The patent is primarily to show that, back in the forties, large size incubation was recognized as a need, and in the other drawings of this patent, he shows the arrangement of his chicken yard so that chicks may be cared for, for three months before they are sold.

Q. Now, Dr. Greene, do you find in this apparatus with its 7,500 eggs, an arrangement of these eggs in tiers and trays, one over the other?

A. I do, yes.

Q. And provision for the circulation of heat?

A. Yes.

Q. And ventilation?

A. Yes.

Q. Does he mention moisture, do you recall, in this connection?

A. I don't think this patent records any moisture. We have that in another one which is quite early, however.

Q. Now, will you proceed to the next one on the chart in front of you?

A. The Cyphers patent, your Honor, No.——

Q. Just give that very brief attention.

A. 530,163 of 1894, speaks very definitely about the influence of moisture, and heat, and circulation of air, and carbon dioxide, and most of the things which we recognize today. A peculiar feature of the patent is the use of porous walls so that the condition within the cabinet may, by gas action, suck in moisture or give out moisture, dependent on the conditions outside. The heat is suplied in this by a boiler heated by a lamp, passing through the coils on the tops of the incubator, and then the peculiar wall is made of a porous material for the infiltration of air, humidity, [fol. 398] moisture and carbon dioxide, as I recall it.

Q. And does that patent teach conservation of moisture by the control of the ventilation?

A. Through these wall-, yes.

Q. Through the walls?

A. It is primarily concerned with maintenance of the proper condition of moisture.

Q. And that was by the restriction of the movement of air through these walls, is that correct?

A. That is correct.

Q. Now, pass to the next one.

A. We next come to No. 5, which is one of our important patents in this consideration, to Meschter, No. 347,946. Meschter provides for three trays in his drawing. He states that fresh eggs are to be introduced into a lower cabinet or lower tray B at the start. Your Honor will notice that the lower compartment is not connected in any way with the two compartments above. There is a water floor between the compartment $B^1$. I said B a moment ago; it should be $B^1$. At the bottom of the two compartments B above the one below is separated from the two above by a wall containing the heating water.

Now, Meschter states that he first introduces his eggs through the door on the side into this section which is absolutely independent of the outer part, as far as communication is concerned. and in this he has a chance to ventilate through the pipes DD. The eggs are held here for a certain length of time, and then the tray is taken from this lowest position to one of the two upper positions, where it remains until the full period. However, before that happens, since there is only one original tray for the placing of the early

[fol. 399] eggs, the other tray must have developed its chicks so that the new tray introduced into $B^1$ is then taken up to the other one of the $B^1$s.

Meschter states on page 2, at line 44, "In practice, there are three sets of eggs in the incubator all the time," that is, the early one and two others of later but different dates, for periods of incubation.

He says, therefore, that in practice there are three, and it is evident that, by varying the capacity of the incubator, more than three sets of eggs could be simultaneously treated. Here he is teaching stage incubation of more than three separate stages.

Q. In the same compartment?

A. In the same structure.

Q. And do any of the trays with the eggs of different ages communicate with one another?

A. The latter two, or the last stages, do communicate. In the early stage, however, the heat should be applied, and, of course, in such a machine as this, if the water is hotter than any egg, it gives up heat. On the other hand, if the water is maintained at a temperature lower than that of the hatching eggs, which are giving off their greatest heat, and also at their highest temperature, that water may receive heat and, by circulation, enter into the lower eggs; but in the upper set of trays, the two sets, there is communication, not shown in this figure put on the chart, but if I could trouble the Court to look at Fig. 2—if you want to look at mine, because it is open right here, your Honor, Fig. 2 of Meschter, you will see that there is a space——

Q. Just a minute, Doctor, until the Court finds that. It [fol. 400] is near the front, sir.

A. Fig. 2, the one at the left. You will notice the part marked PZ, which is an air channel connecting the upper two tray chambers together, and there can be circulation, and the figure which is put on the——

Q. Well, now, Dr. Greene, you say "can be". Is it not a fact that there is circulation?

A. There is circulation, undoubtedly, for this reason, that I was just about to call the attention of the Court to: that is, in Fig. 2, it will be noted that the ventilation air which enters at DD near the top, only enters the upper chamber, apparently, and if it were not for this circulation,

which does occur—not only can, but it does—we would have a high content of heat, moisture, and everything else, in one of these trays. You will also note in the figure on the chart that the thermometer D which controls the temperature of the upper two trays, and gives an indication of its temperature, is in only one of these two trays, indicating very clearly that circulation between these two chambers does occur and will occur.

Q. Now, what about the openings; are those openings large openings or small restricted openings?

A. They are small openings compared with the volume of the machine.

Q. What about the moisture; is that applied?

A. What, sir?

Q. The moisture; how is moisture applied?

A. The moisture in this particular machine is applied by the trays marked $O^2$ which are metallic or other kind of trays, and on top of them is placed a piece of blotting paper or some other absorbent material which holds the moisture and exposes a large surface for evaporation.

[fol. 401] You will note that, in the first stages of incubation in the lower one, there is no water chamber, because the eggs in this early stage do not need moisture.

Meschter, at this early date, appreciates the things necessary for incubation. He controls his moisture. He controls his heat. He has staged incubation. He arranges for the turning of the eggs, and through the water jackets, heat from some of the eggs undoubtedly passes to some of the others, and also he calls for making these of larger sizes.

Mr. Toulmin, Jr.: I call your Honor's attention to page two, line 44, to 54, which your Honor might like to mark, where it teaches the use of more than three sets of eggs, and the transfer features. The preceding paragraph is also interesting, starting at line 33, running down to 44.

The Witness: I would like to read it, if you desire, Mr. Toulmin?

Mr. Toulmin, Jr.: No, I think his Honor has marked it; no need to read it, to save time.

Q. Have you anything more on this patent, Dr. Greene?

A. No, I have covered that one.

Q. Now, this patent, to summarize it, shows the use, does it not, of a series of egg trays, one over the other, a portion of which, at least, communicates with one another?

A. Right.

Q. And the eggs are in different stages of incubation?

A. That is correct, sir.

Q. And there is air circulation?

A. Correct, sir.

[fol. 402] Q. There is conservation of moisture?

A. Yes.

Q. There are restricted openings communicating to the outside?

A. Yes.

Q. This has everything except a mechin-cal fan, is that correct?

A. That is correct.

Q. And what have you to say to the circulation of air by means other than mechanical fan? Just make that brief.

A. The mechanical fan has the advantages of getting considerable capacity in a small space, and with the improvement in fans, which has occurred in the last 25 years, and also the cheapening of power and the supply of power, the fan is undoubtedly better fitted to do the circulation than either the steam jet, which is mentioned by the Buffalo Forge Company as a method of producing a draft, or the gravity system of natural circulation. At the time that most of these patents were issued, fans of small sizes and small motors, and even the supply of electrical energy to the farm, was something not dreamed of, and in principle, circulation is produced by causing a difference of pressure.

Q. By heat?

A. By heat, yes, or by fans, or by moving streams of other fluids.

Q. Well, now, as to the rapidity of a stream of air rising from a heating lamp, what, approximately, is the speed of the air so heated?

A. I have made tests with a piece of pipe, stove pipe, four and one half inches in diameter, and as I recall it, about three and one half feet long, and I placed two candles —one candle finally—below that pipe, which I covered with a non-conductor to conserve the heat, and I got a chimney effect, giving a velocity of about 120 feet a minute.

[fol. 403] Q. From a single candle?

A. Heat from one candle.

Q. And what would you say would be the velocity through pipe such as Stulik, where you had a lamp or other heating

means furnishing the heat? If you will look at Stulik for a moment.

A. The pipe alone might have a fairly good velocity, but I believe the resistance of the eggs would produce a velocity less than that which I have stated, but it must have produced sufficient velocity to enable him to maintain a uniform temperature within his staged incubator.

Q. Now, will you pass to the next one?

A. The next one, No. 7, is McAslan of 1895, No. 540,107. This is a patent teaching stage incubation and the regulation of the position of the egg trays in accordance with the age of the eggs. In this selected Fig. 1 of the McAslan patent, we have three egg chambers. These egg chambers are heated by water warmed by the lamp at the left, and circulated in the ceiling of the incubator. In the left-hand compartment is a thermostat to regulate the lamp and also regulate the flow of air. The eggs can be raised on the platform by the rods 16, which are moved by handles projecting out from the side of the incubator.

At this date McAslan recognized the various amounts of heat and temperatures of eggs in different stages of incubation, and placed eggs of different ages within one circuit, however, using eggs of the same age in each one of his compartments.

Q. Does he mention that fact in the specifications, as to having several compartments and adjusting the conditions [fol. 404] to the eggs of different stages of incubation?

A. He does. Reading from page 1, line 7:

"My invention relates to improvements in incubators and in the heating apparatus therefor; and the object of my invention is to produce a cheap and simple incubator which is arranged in a series of compartments adapted to contain eggs to be hatched, which has the egg trays in several compartments arranged in such a way that the eggs may be subjected to different degrees of heat, according to the length of time they have been in the incubator, which has a perfect means of ventilation, which has its heating apparatus constructed and arranged so that the temperature may be controlled to a nicety, which has a thermostatic device to regulate the heat, and which also can be easily regulated by hand if desired."

Q. Now, Dr. Greene, does this patent teach the use of separate compartments for the handling of eggs of different ages as in the case of separate hatching?

A. It does.

Q. And this was in 1895?

A. That is correct.

Q. Now, will you turn to the next patent, please?

A. The next patent, to Woods——

Q. What is the number?

A. 656,760.

Q. British patent?

A. Beg pardon.

Q. Is it a British patent?

A. No, it is an American patent; Woods, 656,760, U. S. of 1900, is brought in to show the control of air circulation through a box C on top for inlets, and F at the bottom for outlets, through membranes I and J, so that there [fol. 405] are no currents over the eggs, but the air travels smoothly in a diffused form. There are regulators W and X at the left-hand side of the picture which control the admission of air as the temperature changes, because at the right hand side of the picture R is a thermostat. The handle M extending out at the right of the machine is for the purpose of turning the eggs at different times.

Q. The compartments here are arranged parallel instead of one over the other, is that correct? But, they communicate by common communication passage ways as in Fig. 2? Have you got Fig. 2 before you?

A. In Fig. 2, which is a continuation of this patent, Woods states, on page two, line 85, "Furthermore, the entire number of eggs, say 1,000 or 2,000 contained in any one hatching chamber, should be spread out on the movable trays so that all would occupy as near one level as possible."

He then states that, for this large number, the arrangement shown in Fig. 2 would be employed, and in this case, he places them side by side, with a partition between.

Q. Now, the next, Doctor?

A. The next patent, to Bell, is a very important one, your Honor, and I think that the figures 9, 10, 11, illustrate the figures of the patent. The description, however, of this patent, is most important.

Q. You do not mean figures 9, 10, 11, for the views?

A. No, figures 1, 2, and 3 of the patent, but numbered 9, 10, and 11 on this chart.

Q. I see.

A. Bell, in his invention of 1902, states on page one, line 8:

"This invention relates to incubators, and has for its [fol. 406] object to provide an improved device of this character which is of great capacity so that an attendant may have access to the interior thereof, for the examining of the eggs, and for any other purpose, without exposing the eggs to the outside temperature. It is, furthermore, designed to provide for effectively ventilating the interior of the device so as to preserve a proper temperature for the unhatched eggs, and also, for the recently hatched chickens, and at the same time prevent the incubator from being chilled too rapidly."

If you will look at Fig. 1, your Honor, you will see that this is practically a house in which a large number of trays are arranged in tiers. The circulation is produced by the lamp 15, or more lamps, as he says. The humidity is cared for by the water pan 20. The opening 14, which you see in the picture, is the opening for the admission of fresh air. With the general scheme as shown in this picture, it is then well to turn to the previous page of the patent, containing Figs. 2 and 3, and we note that in Fig. 2 the fresh air inlets 14-14 are shown. The outlet in the roof 17 is controlled by the damper shown in Fig. 3 at 16, and then also there is a regulator 19 which closes off this outlet automatically. The air which escapes into the roof of the building can leak out to the atmosphere.

In this machine the limited amount of fresh air is controlled by 14-14, and the air which is warmed and started in a motion by this heating device 13 traveled up through the egg trays and then, of course, to supply the air which [fol. 407] has been raised through the instrumentality of the lamp. The air has to circulate down through the corridor shown in Fig. 3, so that we have here eggs arranged in tiers and the circulation of air going over the various eggs, the return of that air, the mixing of fresh air to control the proper humidity and oxygen content, and then, if we look at the picture, Fig. 1, we see that the number of

eggs is so great in this, that in accordance with what he says, and also from what we know from the evidence in this case, if this were not staged incubation, the heat from several lamps would not be sufficient for the heating of the eggs; and also, at the end of the period, not enough fresh air could be brought in to keep the temperature down.

He says distinctly on page one, line 14:

"It is, furthermore, designed to provide for effectively ventilating the interior of the device so as to preserve the proper temperature for the unhatched eggs and also for the recently hatched chickens, and at the same time prevent the incubator from being chilled too rapidly."

In this, if Mr. Smith claims that his disclosure covers anything but that which he says distinctly in his patent, namely, the hottest eggs at the bottom and colder eggs as you gradually go up, then, with the exception of a motor-driven mechanical fan, we have all of his teachings in this patent.

Q. And what would you say as a mechanic and engineer, as to the lamp 13 and its equivalency to a motor-driven fan blowing air over hot pipes?

[fol. 408] A. Well, your Honor, I have, as I say, made a test during rather warm weather, with a single candle, to keep the temperature of the circulated air from rising above 99 or 100 degress, and I have gotten this velocity in a four and one inch pipe.

Now, we know that in boiler work, previous to the time at which fans were manufactured at reasonable prices, and properly constructed, we used chimneys for draft I personally was connected with the Philadelphia Traction Company when we took out fans which were producing induced draft on our boilers, and substituted for those fans stacks 170 feet high. Now, the fan was probably 18 or 20 feet high; and in this particular instance, they were having so much trouble with the economizers to which the fans were attached that the engineers of the company thought it would be cheaper for them to substitute for mechanical drafts, induced draft, a natural circulation chimney. Each of these forms of devices can be used for moving the air, and any air movement through them are the equivalent, although they have certain inherent qualities, which would make me prefer one rather than the other.

Q. Now, Dr. Greene, do you find in this Bell patent, a teaching of staged incubation in a compartment that is big enough for a man to walk in the corridor adjacent to the eggs where thousands of eggs are put in tiers one over the other?

A. I do.

Q. Do you find a teaching of the application of moisture within such compartment, to the eggs?

A. I do.

Q. Do you find a teaching of continuous circuit of heated [fol. 409] air laden with moisture, passing up through the eggs and I find a circuit but it is not continuous because hot air is driven out at the top from the vent and cold air is brought in at the bottom.

Q. And with the exception of that it is continuous?

A. It is continuous.

Q. And in the same sense, Smith does have a continuous circuit because he takes in some cold air and releases some foul air; that is correct?

A. Who?

Q. Smith.

A. Yes, that is correct.

Q. So that Bell and Smith are alike in circulating the air, which is heated, around and around through tiers of eggs of different ages, releasing some of the air and taking in some of the fresh air; that is correct, is it not?

A. That is correct.

Q. And you have the restricted opening at the top of this Bell incubator, which is controlled to the amount of air that is released, is that correct?

A. That is right; it is straight automatic or hand control.

Q. And in Smith, he restricts his air inlet opening rather than his air outlet opening, is that correct?

A. That is correct.

Q. And in this Bell patent, we have a small passageway 14 of restricted size for the inlet of fresh air, is that correct?

A. That is correct.

Q. And does this patent teach the use and advantage of a man entering into the incubator and standing in the corridor for handling eggs which prevents hot air from making its exit while the handling is going on?

A. That is very clearly stated in the part which I read.

Q. Now, is there anything in this Bell patent that Smith [fol. 410] does not have with the possible exception of the question of whether the lamp 13 is the equivalent of the power-driven fan? That is the only issue between them, is it not?

A. That and the distinct statement that Smith makes that the eggs must be put in a particular order.

Q. Now, will you pass to the next one?

A. Now, the next patent, your Honor, is to Perkins, No. 798,697, of 1905. This patent teaches staged incubation and a continuous progress of the egg trays, tilting them as they pass through the separate compartments. The large chart in Fig. 12 reproduces Fig. 4 of the patent, and Fig. 6 of the patent is marked No. 13. Looking at Fig. 6, the eggs are introduced in trays at the right hand and of this arrangement of compartments and connected to an endless chain. The eggs remain in the compartment for a certain length of time, and then they are moved by moving the chain through the means of the handle into the next compartment, which is marked J in Fig. 6. You will notice the chain is inclined downward as the chain enters that compartment, and then inclined upward, so that the eggs within the trays get a slight tilting motion, as has been known for many years, is the proper way to treat eggs.

Then this progresses from day to day, until we reach the extreme left of the figure, at which time the egg tray is removed from the upper compartment and placed into the lower compartment on the belt passing through there, and then progresses across to the right, and finally the tray, at the hatching period, reappears over at section $A^1$.

[fol. 411] In this Fig. 6, the heating is controlled by means of electric lamps and the same thing is shown in Fig. 4, although in Fig. 4 we have hot water coils or steam coils H in the air channels. The air is introduced through openings C to $E^2$, which may be regulated by opening doors, more or less depending on the amount of air which a particular compartment needs.

The separate compartments have individual thermostats in them to regulate the heat proper for that age of egg. Perkins at this time recognizes that there should be a difference in the amount of heat for the different eggs, and in this machine he speaks of carrying out the number of compartments so that the eggs can advance through the com-

partments each day, or remain one day on one side of the compartment and the next day on the other. As you enlarge the machine, you can allow the eggs to stay a smaller time in one of these sections. This is a machine of large capacity for staged incubation, recognizing the need of heat and air for the different stages. The temperature and the air circulation are regulated.

Q. Does this patent recognize the necessity for putting eggs in the separate compartments according to age, as in the case of separate hatching?

A. It does.

Mr. Toulmin, Jr.: I call your Honor's attention to several parts of this patent that you might like to mark with a pencil, if you wish, pertinent parts. It is the patent to Perkins, 798,697. On page one, the left-hand column, line 7 to 26.

The Court: I see there are some markings here.

[fol. 412] Mr. Toulmin, Jr.: And then lines 46 to 52; and then in the right-hand column, running along from 85 to 95, about the air inlets and outlets.

Now, on page two, lines 31 to 41, and the bottom of page two on the right-hand starting at line 127 to the bottom of the page, and at the top of the succeeding page to line six; and then a paragraph in the same column starting with line 20 and running to the end of that paragraph. Then, over on page four, at lines 85 to 90 and then over on page six, lines 21 to 29, teaching the addition of sections as James used additional sections, lines 20 to 29.

The Court: Those are marked already.

Q. Now, Dr. Greene, will you proceed to the next patent, please?

A. The next patent shown on the chart is that to Osborn, No. 1,144,232 of 1915. This patent, your Honor, is shown in Fig. 6. The cross-section contains a series of trays arranged above each other, and these trays are mounted on an angle iron so that they can turn; the whole device is circular, and it is warmed by means of gases from the lamp which heats the water that circulates around to the periphery of the machine and the top and the bottom. You will note that there is a regulator DD at the bottom for admitting fresh air, and at the top openings DD controlled by dampers for the discharge of this air. There is a net work

in the bottom of each pan so that natural circulation due to gravity may occur within this chamber. The heated air from any hot eggs would be distributed upward, to be replaced by air coming from beneath it and starting up a circuit within the chamber.

[fol. 413] The patent states on page one, line 107:

"The division of the trays by means of partitions provides for the distribution of eggs, or in other words prevents the mixing of different kinds of eggs"; and on the next page, continuing, "It is apparent that the incubator may be continuously operated, fresh eggs being supplied as others are hatched."

This to me, teaches the fact that the inventor-patentee is endeavoring here to arrange his eggs in trays shown in Fig. 4 with each division so that he may put new or old eggs in the same tray, but separated, and he may work it continuously. Continuous operation indicates operation on each day, and the principle shown in this patent indicates the possibility and the wording indicates the probability that in this device Osborn is practicing staged incubation, heat control, fresh air control, circulation of air within the chamber, trays arranged vertically, a method of producing that circulation through heat from the eggs as well as from the water jacket, and then finally a control of the outlet. His circulation throughout the whole device is produced by natural circulation of heat transfer. There is no outside corridor, and there is no mechanical device for moving the air.

Q. Now, you will pass to the next one, please.

A. The next Patent, No. 15, is a Fullington 1,205,445. The purpose of the patent is well stated on page 1, line 9. The invention relates to incubators or brooders, and has particular reference to an attachment or a type of devices [fol. 414] which may be dependent upon an automatically regulated temperature at which the brooder or incubator is kept.

More specially, it is the object of this invention to provide means normally quiescent for removing the heated air from the interior of the incubator when actuated automatically by means governed by the increase of heat so that the overheating of the incubator is prevented.

The devices, your Honor, as shown on the chart consist of the fan nicely illustrated in Fig. 3, but applied to the top of the incubator as shown in Fig. 1. The small fan driven by an electric motor, 10, is driven in the patent drawing by a dry cell 13. Connected to this motor is the fan 1 to 12, which delivers there through the pipe 18 and down into the incubator space. The pipe 17 withdraws air from a perforated ceiling or cavity in the box and by means of the little diaphragm shown in Fig. 5 over at the lower left of the picture the partition or obstruction 17-B forces part of this air which is being sucked along out into the atmosphere thus removing some of the foul air from the device. At the same time if you look at Fig. 1 you will see that there is the opening marked 20—reading from page 1, line 103—a branch pipe 20 extends from the turn of the pipe 17 and passes through the wall of the fan chamber 9, opens into the air without, and thus provides means whereby fresh air enters the fan when the latter is running, said air being forced through the pipe 18 into the incubator.

This Patent, your Honor, of 1916, November 21st, discloses a fan attachment for maintaining temperature within an incubator, removing foul air, bringing in fresh air. The [fol. 415] picture 4 to which I have not referred is the thermostatic control of the motor. Should the incubator be set for a continuous operation this device would circulate a certain amount of fresh air and remove foul air continuously.

Q. Do you find in this patent the teachings of the continuous circuit of air with some relief for foul air and some introduction of fresh air as the circuit continues?

A. That is true. The diaphragm 7 does not remove all of the foul air but only a portion of it, and the remaining fresh air is brought in through the pipe 20.

Q. And this is in an incubator?

A. And is connected to an incubator, and it is entitled an incubator attachment.

Q. Prior to this time in various patents, Bell and others, they use all of those features with the exception of the fan as shown?

A. That is correct.

Q. And to that teaching the Fullington adds the power-driven fan for circulation purposes? Is that correct?

A. Yes, sir.

Q. Pass to the next one.

A. The next patent is the British Patent to Gardner, No. 10,288 of 1887. The chart, your Honor, quotes only the claim of this patent. The improvement is relating to incubators substantially as hereinbefore described, which consists in the arrangement and operation of a series of incubating chambers or chambers containing incubators heated by air set in motion by an artificial means (that means not natural air-circulation), each of the series after the first being kept at a slightly lower temperature than the preceding chamber, and the eggs being periodically transferred through the series from the chamber having the highest to that having the lowest temperature.

[fol. 416] I would like to, your Honor, to call attention to the fact that this patent from which only the claim has been produced on the chart states very nicely the knowledge at this time, which you must remember is 1887—that is practically 20 years before Smith—that at that time differences in conditions of eggs at different periods of incubation was clearly known. He states for instance on page 1, line 14: "The incubator constructed according to these improvements consists of a series of compartments or chambers within which are fitted drawers for containing eggs. Care is taken in the construction that all the drawers are interchangeable. I have found by experiment that the external or artificial heat required for hatching gradually diminishes from the first day, the total difference being about three degrees. I therefore arrange that each chamber or compartment shall be continuously maintained at the same temperature and that succeeding or different chambers shall have different constant temperatures, so that the drawers containing the eggs may be periodically transferred from the high temperature chamber to the lower, until they have passed through the whole series of chambers and are finally hatched in the chamber having the lowest temperature, thus without limiting myself to any particular mode of construction or number of chambers, the first chamber may have a constant temperature of 105 degrees, the second of 104.5, the third of 104, the fourth of 103.5 degrees, the fifth, 103, the sixth 102.5, and the seventh and last 102 degrees.

In such an arrangement the chickens would be hatched continuously. Fresh eggs may be placed in the first com-

partment of the apparatus daily for which purpose it will [fol. 417] be convenient to arrange three or a multiple of three drawers in each chamber, so that each day's eggs may be kept separate, and be separately transferred to the following chamber on the following day.

Each of the chambers or compartments communicate with a flue which is connected to an exhaust fan, an aspirator or other means for withdrawing the air."

Your Honor, he definitely points out that since the eggs in the late stages are giving up heat he requires cooler air to abstract that heat. The earliest eggs needing heat, he wants the hotter air in those compartments. Then he says that he can arrange these seven compartments to be used for shipping daily, meaning that in each one of the compartments he has stage incubation and circulation of course, because the atmosphere is maintained uniformly so that even here in this date of 1887 we have taught the demand and requirements of eggs at different ages, stage incubation in separate chambers, divided or sub-divided to stage incubation within the same chamber, because he distinctly says that he would put three eggs in one chamber and take a tray from the chamber daily and replace it by another tray.

Q. And it teaches the use of the exhaust fan for controlling the air circulation and atmosphere within an incubator? Is that correct?

A. He does.

Q. Now, will you pass to the next one?

A. Before passing to the next patent I think that the patent to Renwick is not given on the chart.

Q. All right, refer to it.

A. I would like to refer to it, because at this early date it is only a minor matter, your Honor I mean it is a minor in the patent but it is important as to date. In this Ren- [fol. 418] wick Patent No. 193,616 of 1877 we have this statement which to me is very important. He states in the second paragraph on the first page: "The requisites of an incubator are a regular heat, thorough ventilation, a supply of moisture; and the object of the present invention is to attain these requisites." There must be heat, ventilation and moisture, and then the patent goes on to explain how these things may be obtained in this early device.

The next patent on your chart No. 18 is the Fig. 1 of the patent to Proctor and Knowles, No. 432,282, of July 15, 1890.

Q. Was that one of the structures that we saw over in the demonstration room this afternoon?

A. This particular one is not. That is another Proctor patent. This is Proctor and Knowles. In Fig. 1 and shown on the chart, without referring to the patent, we have two chambers with a channel between containing heating coils. The chambers on each side are divided by a flooring to separate the chambers into two rooms, one above the other. These are rather large, and in the rooms are rails MM, for the suspension of yarn or other material to be dried. When the material is placed in the compartment the air is circulated by means of the fans CC, the device being in duplicate enables the operator to use one side while unloading and loading the other side. The air is drawn backward or forced backward, rises through the chamber containing the tubes, and if the damper K is closed at the top of the device, and the damper G opened, the air continues to circulate, take up moisture, be heated still higher, continues to take up moisture, and finally when it has gotten to the proper [fol. 419] point, if the material within is not dried out, then the damper K is opened and the damper at the left, H, is opened, to allow fresh air to enter. It is also possible to open damper J and close damper I at the bottom so that the air discharged will not pass through the heating coils.

The Court: Had we better suspend at this time?

Mr. Toulmin, Jr.: Yes, I think so.

Mr. Ely: May I make a suggestion, your Honor? May I ask the doctor a few questions?

Mr. Toulmin, Jr.: No, I would rather continue.

Mr. Ely: Then let me say this, there is a dispute here between Mr. Taggart and Dr. Greene as to what actually takes place in the Smith machine filled with eggs, whether the air currents in the machines filled with eggs and operating is as Mr. Taggart testified to in the egg chamber, about 75 to 120 feet per minute. The doctor here has said that his calculations, which I understand are largely theoretical and not done with any actual machine, which show that that air space should be much higher.

Mr. Toulmin, Jr.: That is not correct. He made actual tests.

Mr. Ely: Did you make actual tests?
A. I have made actual tests.
Mr. Ely: With the eggs in the machine?
A. On a similar machine.

[fol. 420] Mr. Toulmin, Jr.: I do not want to have my examination interrupted.

Mr. Ely: As I understand, we are not going to meet here again until Wednesday. Would you mind meeting Mr. Taggart at Frenchtown, New Jersey, on Wednesday, go to that plant. I understand it is the Kerr Company, at the Kerr Incubator plant, go in there with Mr. Taggart and make an actual measurement of what the speed of the eggs should be in the machine there with the eggs in them? The reason I ask that is that in this particular vicinity they have not started the hatching season yet, and while there are some incubator plants around here they haven't got going full blast, and I understand they are going at Frenchtown, New Jersey. They hatch all the year around. So that if the doctor will meet Mr. Taggart whenever he says, they could go over to Frenchtown, New Jersey, and make actual measurements together of the speed of the currents in those machines, then we could have a situation where there would be no dispute and we would find out just exactly what was happening in the Smith machine. I offer that suggestion. Mr. Taggart is ready to meet you whenever you say and go to the plant and make actual measurements.

Mr. Toulmin, Jr.: That is satisfactory to us, your Honor.

The Witness: I would like to point out to your Honor that the machine at Frenchtown, which is quite similar to the one which the defendant has exhibited, is provided with [fol. 421] curtains, but there is no way to make readings behind those curtains. When I made my own test I had to do this, I had to get the anemometer ready, pull the curtain away so that I could get back of it, place it in position—and not the best position, because you did not have time for it. Then get outside and wait for four minutes and get in again and take the readings. The error in starting and stopping such an instrument by pulling eggs out of the road is going to disturb things.

The Court: How are your figures obtained before this?

A. My reading which I have is not a correct reading but it shows much more than 60 and 80 feet.

Mr. Toulmin, Jr.: Dr. Greene, now, to shorten this, Mr. Ely and myself agree that Mr. Taggart will arrange to put an ising glass window in this curtain at Frenchtown, and in that way both of you will be able to look at it and settle that question.

Mr. Ely: We will take this curtain which was here down to Frenchtown.

The Court: We will now adjourn until Wednesday.

(Proceedings adjourned to Wednesday, February 6, 1934, 10:00 A. M.)

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[fol. 422] (Proceedings Wednesday, February 7, 1934, 10 A. M.)

(Appearances: Same as before noted.)

Mr. Toulmin, Jr.: Mr. Gillard. Dr. Greene will be here tomorrow morning, your Honor, and I will proceed with my fact evidence.

Lavergne C. Gillard, a witness on behalf of defendants, testified as follows:

Direct examination.

By Mr. Toulmin, Jr.:

I have been with the James Company, the defendant in this case, twenty-seven years. My duties during the last ten years, generally speaking, have been assistant manager and member of the executive committee which has supervision over all development and experimental work.

All experimental and development work comes under the supervision of the executive committee, and I am a member of that committee. I have particular interest in that personally as a member of the executive committee on behalf of this corporation. I am especially charged with that kind of work. In connection with my supervision of the development and research work, I have familiarity with the expenditures made on behalf of our company for research work in particular fields. In the course of these duties just described, I have had something to do with the supervision of development of the James incubator and hatcher, now the subject of this present controversy.

As to what extent I have had that supervision, from the beginning of our business in 1907 until 1920, we manufac-
[fol. 423] tured a line of barn equipment. Although we started in a small way, we had a few basic patents and pioneered a new line, which was a considerable step in advance of anything that had been used up to that time, and our business grew very rapidly, based on a quality article in these basic patents. Along about 1920 or 1931, the poultry business was coming into its own, and farmers were, many of them, making as much or more money off their flocks of poultry as the dairy farmer was out of his cows. Up to that time we had been supplying dairy equipment, and we had a force of men in the field, calling on farmers and calling on dealers; our product being sold through dealers; and these farmers and dealers were suggesting to us that we should add a line of poultry equipment which could be sold by our regular force of men and through our dealers. Then, too, our barn equipment was a very seasonable proposition; the bulk of our shipments being in the fall of the year, and we needed something else to round out the line, and the poultry lines, feeders, waterers, nests, and so forth, would fit in very nicely with our selling plans.

I had something to do with the supervision and development of the poultry line for all poultry purposes. Up to 1915, that is, from 1909 to 1915, I had been sales manager and naturally that phase of the adding of this line came to my attention and I was a part in formulating the plans and in 1921 the outlook for the sale of these poultry lines was so satisfactory that we decided to bring in a man to head up that division, and we procured the services of Mr. Dann, formerly a professor in Cornell University and also at the University of Wisconsin.

[fol. 424] Mr. Dann is very ill, and he is at Miami, Florida, endeavoring to regain his health. We do not expect him to recover. It would be a period of weeks, if he does.

From along about that same period our men on the road, selling poultry equipment, found that many of these poultry raisers that were buying our products, were hatching for their neighbors and they were using various types of the so-called cabinet small machines and as their business grew, they would add another unit of some small make of machine and that indicated to us there would be an outlet for incubators to that class of farmers and poultry

raisers. That gave us the idea that in adding an incubator to our poultry line it was important that we have a machine that the farmers or poultry raisers could add to, unit by unit, and that is one of the things we had in mind in developing the first machine we turned out, what we call a sectional machine. That machine is being sold today.

We had always sold our barn equipment and poultry lines on a quality basis rather than on a price and in entering the incubator field we had in mind producing a quality chick, not so much quantity as it was a matter of producing a quality chick, and I believe it was in the spring of 1922 that Mr. Dann made a survey throughout the various parts of the country to determine the class of chicks which were being produced by the various types of machines then on the market; many of them sectional and there were a few cabinet machines then and many of these machines were turning out a quantity of chicks, but some of them were not so strong in quality. Mr. Dann found there was one machine which had been on the market, the Mackay, [fol. 425] which produced a very high quality chick, although the hatches were uneven, and we obtained the services of Mr. Mackay to work with our engineer in developing the present sectional machine, not the incubator hatcher, the sectional machine, and it was a case not of going out and copying some machine, it was a case of building a machine to suit our requirements, namely, to produce a quality chick, at the same time having in mind this sectional idea so the machine could be added to as the business of the hatchery man grew.

I neglected to state, in speaking of this development of this sectional machine, that in, I believe it was 1921, and 1922, our Mr. Shodren was assigned to incubation studies from an engineering standpoint. He is our research engineer.

After we got through with Mackay and the development of the sectional machine, the sectional machine was put on the market in 1923, and is still being manufactured. About that same time we also pioneered the idea of a closed ventilated poultry house, in opposition to the generally accepted theory of the open house and straw loft and so forth. We later pioneered the idea of heat in the closed ventilated poultry house. I believe it was from about 1923 to 1925 bacillary white diarrhea spread from East to the West and there was considerable concern about it throughout the

hatching profession, and I believe it was in February, 1926, the American Veterinary Medical Association came out with their bulletin telling about the studies made at Kansas State Agricultural College, which demonstrated the fact that chicks in cabinet machines, infected with [fol. 426] B.W.D., spread the disease to other chicks in the same machine. By the cabinet machines I mean the type of Smith machine here, in which the hatching and incubating are all done in one cabinet.

At that time our men, and also Mr. Dann, were finding in the territory many hatchery men who were using cabinet machines, who were incubating in those cabinet machines and hatching in the so-called sectional machines of other makes, as well as our own, and these hatchery men were reporting to us they were getting a high quality chick; at the same time they were freer from the spread of B.W.D. They suggested to us the idea of developing the separate hatcher machine. At the same time many of these hatchery men or customers of ours, that were using our sectional machines, were growing up, so to speak, in the hatching business, and some of them were becoming cramped for space and they were suggesting to us that we should have a machine which would hatch this same quality chick, and at the same time would occupy less floor space. As a result we set our engineers busy studying a machine which would accomplish that purpose, and our Mr. Markey, who had, with Mackay, developed the sectional type machine, was assigned to the development of this so-called incubator hatcher. In the spring of 1926, Mr. Markey made the first 4200 unit, and this was used in his own home throughout that spring. In the spring of 1927, this machine was rebuilt and used again in his home and later in the season was brought to our plant and we hatched with it throughout the summer months. Then, the next spring we put out the first units in the Black Hawk hatchery at [fol. 427] Jaynesville, Wisconsin, owned by Fred Porter. Then in the spring of 1929, we put out thirteen machines for field tests in various parts of the United States, and this machine was commercially marketed for the first time in the fall of 1930.

In our set-up in our company we have a research department, presided over by Mr. Shodren, and we have a development department for putting research results into practical form, presided over by Mr. Markey.

I have occasion to examine these development and research laboratories and be familiar with what is going on through our shop. To my personal knowledge our company has never, at any time, had a Smith incubator in our shop or in our development department. To my knowledge our men in the engineering or development or shop use have not operated the Smith incubator during the period of our experimental work. So far as my knowledge is concerned, the Smith machine has had no connection with the development of our machine.

We were the pioneers in the incubating business in providing a machine for incubation and another machine for hatching, such as I have just described. In addition to what I have said, this disease question was mainly the principal motive in having these two separate machines. At the same time, we wanted to produce a quality chick.

I have referred to the journal of the American Veterinary Medical Association. This is the volume or issue of February, 1926, journal of the American Veterinary Medical Association, in which we find the article in question entitled "Studies in Transmission of Bacillary White Diarrhea in Incubators," on page 631, and this same study [fol. 428] is written up again in a later bulletin, I believe it was in November of the same year, by the Kansas State Agricultural College. On referring to page 641 of that article in the American Veterinary Association Journal, I find that the following conclusion is arrived at by the scientist who made the investigation:

"That bacillary white diarrhea was disseminated by artificially infected chick down placed in a forced draft type incubator."

That is the conclusion to which I have referred as influencing us in the development of our present machine.

(Defendants' Counsel then offered in evidence the journal of the American Veterinary Medical Association with particular reference to the article referred to by the witness, which occurs on pages 631 to 641, inclusive, and it was admitted as Defendants' Exhibit 66.)

I have just referred to the Kansas State Agricultural College Experiments, which were reported in the American Veterinary Medical Association Journal. The publication

handed me is the November, 1926 Bulletin of the Agricultural Experiment Station, Kansas State Agricultural College, Manhattan, Kansas, and the article in question appears at pages 46 to 49. I find there a similar conclusion to the one just quoted from the American Veterinary Medical Association Journal.

[fol. 429] (Defendants' Counsel then offered in evidence this volume and it was admitted as Defendants' Exhibit No. 67, and particularly pages 46 to 49, inclusive, referred to by the witness.)

In the course of this development work of ours the James Company has spent between thirty-five and forty thousand dollars upon the development of the incubator hatcher we are discussing here in this suit. We still use the hatcher on our sectional machine as an incubator hatcher. In the development of the incubator hatcher, our developing department had in mind the desirability of using the sections of the so-called sectional machines as the hatching section for the incubator hatcher and those sections are still used in that manner.

Our company has either acquired or taken out various patents. Our company owns the Fullington Patent 1,210,445, of November 21, 1916. We have the assignment of this patent. Referring to the patents that have been marked here for identification as Exhibit 49, first I find a patent to J. L. Nix, No. 1,548,478. That is owned by us; also the patent to G. T. Markey, No. 1,751,093. Likewise a patent to G. T. Markey, No. 1,796,872; also a patent to G. T. Markey, No. 1,837,458; and Patent No. 1,939,908, to George T. Markey. These are the patents we are operating under in connection with our present incubator hatcher.

Mr. Toulmin, Jr.: Now, if the Court please, we renew our offer of Exhibit 49 for identification. If Mr. Ely does not withdraw his objection to it, I would suggest that, for a mat-
[fol. 430] ter of saving time, as we have a great deal to do, that we mark it subject to your acceptance after you examine the authorities on the subject, if that meets with your Honor's convenience, without stopping to argue the question here.

The Court: Very well.

Mr. Toulmin, Jr.: I have a memorandum here and am prepared to argue it if you wish.

Mr. Ely: I will just make my objection with the understanding that your Honor will pass on it when you come to the argument of the question.

The Court: That is, the five patents?

Mr. Toulmin, Jr.: Yes, your Honor, that is the five patents. The Fullington Patent is already in evidence. You may have the witness.

Cross-examination.

By Mr. Ely:

We started our development of this incubator that is in controversy here in 1926.

I was ill at the time we purchased the Fullington Patent. I believe it was in 1930, or 1931; 1930, I think. It was purchased after the development of this machine by our people. I do not know on whose advice we bought this Fullington Patent inasmuch as I was ill for 13 months and was away from the office. I do not know whether it was after we had been notified of infringement of the Smith Patent as I do not know the date of that notification. I think the Fullington Patent was found on a search by some of our patent attor-
[fol. 431] neys. As to whether we then went and tried to find Fullington and then bought this patent from him as some sort of anchor to windward, or something of that kind, I am not familiar with those details. I know that the patent was in our name upon my return to work in May, 1931. Whether I had my attention called to the Fullington Patent by reason of the fact that Fullington incubators were on the market anywhere, I don't know. I am not informed whether the Fullington incubator was ever manufactured and sold anywhere. I do not know whether it was a patent on a going incubator that we purchased or whether it was merely a patent which we bought as a possible defense in this case. I am not familiar with those details in buying the Fullington Patent because I was away at the time. I would think we would have some purpose in view in buying patents. Mr. James would be familiar with the reasons for the purchase of that patent. He handled all those matters while I was away. As to whether I am familiar with the fact that we permitted Fullington to testify in the Waxham Case involving the Robbins machine, in California, I am not familiar

with those details, either. That also happened while I was away, ill.

I do not know whether it is a fact that it was customary, long before we started any incubator work at all, to provide incubators with three separate cabinets, to carry on the first period of the hatch in the first cabinet, to move to a second for the intermediate period, and then to move to a third cabinet for the final hatch, as for instance, as exemplified in the Blue Hen Incubator that Mr. Taggart testified to on direct examination. I am not familiar with that fact. This [fol. 432] is not so to my knowledge.

The incubator business is a portion of the total. We have other lines. Barn and farm equipment is a large portion of our business. Our incubator plus our poultry lines, forms quite a portion of the total. It is not half of our business.

These sectional incubators that we manufactured prior to 1926 and 1927 held 180 eggs, I think. This present incubator of ours, that is in litigation here, holds 4,200 eggs a section. I could not tell you how many incubator units of the old style have been replaced by one incubator unit of this new style. Whether 180 goes into 4,200, 23.3, your computation appears to be correct. By making this new incubator, it appears that we have replaced 23 of our old incubator units with one unit here. One of our reasons for getting into this particular type of incubator that is in litigation here was an order to give more capacity in smaller space. It was not one of the reasons that our sale of the so-called still air or previous type had fallen off considerably, due to competition of the so-called forced draft type. That was not a factor at all.

At one time our Concern combatted the forced draft incubator principle.

I recognize plaintiff's Exhibit No. 8 as one of our publications put out by our authority. It is one of our publications. In our 4,200 egg unit I would think there is a saving in labor and fuel over the operation of twenty-three and a fraction of the earlier units. I could not quote any statistics one way or the other as to there being a saving in fuel. Whether our people said that we saved one-third of our fuel costs by operation of this new form of incubator, I am not familiar with the statement. We save fuel in the 4,200 over the corresponding capacity in the old type. Although we might

[fol. 433] not have had a Smith or Buckeye incubator in our plant at the time we developed this, we wouldn't be very good merchandisers if we did not know of the Smith and Buckeye incubators that were out in the field. We knew that both Smith and Buckeye were in the field.

I recall this quotation appearing in our James Way incubator book issued in 1929, as follows:

Mr. Porter says, "Formerly I had to use both floors of my hatchery building for hatching. Now I have increased capacity over previous years and use only a basement for hatching, all giving large capacity and small space."

Mr. Ely: I think that is all.

Redirect examination.

By Mr. Toulmin, Jr.:

Our saving of fuel costs in connection with our new machine, the incubator hatcher, is due largely to the fact that we have insulation on the front, back and sides of our incubator.

We are still combatting forced draft type machines commercially. It is our position that the forced draft machine is not the correct type of machine.

Mr. Toulmin, Jr.: That is all.

Recross-examination.

By Mr. Ely:

We did not have insulation around our other incubators. It was not common practice, to my knowledge, to put insulation around incubators.

Q. Now you say you are combatting forced draft machines, and yet selling forced draft machines. Is that the [fol. 434] way I understand your position?

A. Yes, sir.

Q. You are combatting them on the one hand and selling them on another. In your catalogs do you put your forced draft machines in the front of your modern catalog; look at some of your catalogs and see?

A. Yes, sir.

Q. It is put in the front?

A. Yes, sir.

Q. And the old type is shoved in the back end of the catalog, is that not true?

A. I believe it is listed in that order. That is usually customary with any new construction.

Q. Well, that has been so since you put the new form of incubator on the market, has is not?

A. You mean the old type?

Q. It has been true since you put this new incubator on the market; you have put that on the front portion of your catalog and have devoted most of your catalog to that?

A. Yes, sir. It would be customary to bring a new device in the front of the catalog.

I am not sure that has been during the whole period from 1927-1928. I do not know that it has been the whole time since that incubator has been on the market. The incubator hatcher is shown in the different catalogs here, in the front of the book. The latter part of catalog is devoted to the old form.

As to why we spent thirty-five to forty thousand dollars developing this form of incubator that we are still combatting, we claim, for our incubator hatcher, features and benefits not claimed for the so-called section machine, the forced draft machine, such as in litigation.

Mr. Ely: That is all.

[fol. 435] Redirect examination.

By Mr. Toulmin, Jr.:

Q. Mr. Gillard, did I understand you to say that your present incubator hatcher is a forced draft machine? Did you mean to say that?

A. No, sir.

Q. In response to Mr. Ely's question, whether it was, did I understand you to say that our present incubating machine was a forced draft machine?

A. No, sir.

Q. Did you mean to say that?

A. No, sir.

Q. You meant to say you are still combatting the Smith type of forced draft machine, is that correct?

A. Yes, sir.

Q. And that your present machine is not a forced draft machine from your point of view?

A. Yes, sir.

Q. And that is the policy of your Company?

A. Yes, sir.

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JAMES G. HALPIN, a witness on behalf of Defendants, testified as follows:

Direct examination.

By Mr. Toulmin, Jr.:

I am Professor of Poultry Husbandry, University of Wisconsin. As to my educational qualifications and my subsequent experience, particularly with reference to poultry, I graduated at Cornell in 1905 under Professor Rice, and went from Cornell, after graduation, to Rhode Island Experiment Station at Kingston. That was in 1905. Then, in 1906, I came up to Michigan Agricultural College, now the Michigan State College, at East Lansing, Michigan; and then, in 1909, I went to the University of Wisconsin as head of the New Poultry Department, and have since been there.

In the course of my official duties in these several institutions, particularly at Wisconsin, I have had something [fol. 436] to do with the incubation and hatching of eggs. We have used a good many different kinds of incubators, especially small incubators. We have also used the Candee, and Petersime and James Way. We practice what is known as separate hatching, in our hatching work at the University of Wisconsin. A large proportion of our eggs are hatched in the old style James Way, and in the hatching compartments of the new old style James Way and in Prairie State incubators. The eggs are hatched, for the most part, in separate pedigree hatching capacities because we are an experiment station, not a commercial hatchery. We do the incubating down in the cabinet of the James Way, have for the last three seasons. This is our fourth season doing that. We follow a system of separate hatching and separate incubation because we believe that that is the most satisfactory method. One important reason for that belief has to do with the possible dissemination of white diarrhea, as shown by the work at Kansas. I am familiar with these two

publications that Mr. Gillard has just referred to from the Kansas Institution of the American Veterinary Medical Association.

The basic requirements for the incubation of an egg in any machine, you have to have correct heat, ventilation, moisture, and exit of foul air, which is included in ventilation. Entrance of fresh air is not included in ventilation. These factors of heat, temperature, and ventilation are factors that were known to me prior to 1915, and have been known for a long time. In the older books you will find reference to the importance of correct degree of heat and [fol. 437] correct ventilation. One of those old books where such teachings are given, of which I have here a copy, is De Reaumer's Book, Exhibit No. 27, a book that we use as reference in the history of incubation. This book was published in 1750. I have had this book for something over 20 years. We use it as a reference book in our course in incubation and brooding. That is Course 5. And then in our course on advanced poultry management, Course 107. We have been using that book in those courses more or less for the past 20 years. You have occasion to give more references to this type of work some years than others. It has been used, not as a text that the students buy—of course, the book is not available—but used as a reference text. The date of the copy that I have there, printed copy, is MDCCL.

The author of that book describes very nicely an Egyptian type of incubator, describes incubators he built over baking ovens; and then he also describes incubators that he built using heating vegetable matters. Then, in the fourth part of the book he describes the matter of feeding chicks and raising chickens, and that sort of thing. In the light of my own experience, I find the teachings in this book to be practical and correct so far as the incubation part is concerned, it is surprisingly good. So far as the feeding, nutritional part in the back of the book—it is before the day of the discovery of vitamins and so on, and it is merely of historical interest. In the incubation part of the book I find the teaching of the arrangement of eggs in large numbers in different trays, superimposed one over the other. He describes the Egyptian incubator, shows a central alley- [fol. 438] way and one layer in one room and then in another room, one above the other. I refer to the illustration

opposite pages 47 and 48 where I find this to be the case, where this illustration occurs. Yes, I have 47 here.

I find, in connection with this book, a teaching of the necessity for uniform temperature. There are a number of places where that is emphasized especially in some of the experimental work he did over the bake-shops. It might take me a minute to find that. The work that he did, hatching chickens over bake-shops, there are a number of places where he mentions it. On page 50 he has an incubator that was successfully built over a bake-shop, the baking ovens of the Society of L'enfant Jesus. Referring to the following plate 4, page 51, and plate 5, page 51, there is a very nice illustration of having eggs in various trays, one over another. It is Fig. 3, showing the three trays of eggs, one above the other. Fig. 2 on the preceding page shows five trays of eggs and a place for still another one, I think. That car with the trays one over the other is placed in the heating room over the bake oven. Plate 5 represents, at the upper left-hand corner, a place that he fixed for incubating the eggs. This arrangement, Fig. 3, below, is taken up and moved into the hatching room. I think that is b.

The Court: b corresponds with the places indicated on the other Fig. 2, does it not rr?

The Witness: Your Honor, I did not find b.

[fol. 439] The Court: You just referred to it in Fig. 1.

Q. Fig. 1 is in the middle of the page, Professor?

A. Oh, excuse me.

Q. This Fig. 1, his Honor is referring to.

The Witness: Oh, yes.

Passing on further in this book I find the teaching as to the use of thermometers for keeping temperature uniform, or observing temperature so that you can keep it uniform. The author emphasizes the importance of having a correct thermometer; and some place in here he is very sorry to say that some thermometers are on the market that have his name but he did not make them, and he emphasizes the fact that thermometers must be correct if successful incubation is to follow. Referring to page 147 and the illustration opposite to it, I find an illustration there of the thermometers he discusses in the text. Fig. 1 and Fig. 2 are thermometers.

I find in that figure a plurality of trays, one over the other, with eggs in each tray. These trays are made of wicker, which are like our wire trays today. He also shows there two systems, in one of which egg baskets are suspended, and in the other of which he has four handles on the basket, and puts the one basket of eggs on top of the handles of the one underneath. Referring to Fig. 3, when they cannot afford a real thermometer, they melt fat, butter and lard mixture and put it in the bottle, and then put that bottle in the incubator, and if the incubator is the right temperature that fat will be so it will flow but slowly. [fol. 440] Referring to page 130, the text along the middle of the page, we have used that reference in our teaching to show that even back then they knew that there was a very decided difference in the behavior of the developing embryo to excessive heat. As has been frequently pointed out, excessive heat during the earlier stages of embryonic development results in extremely rapid consolidation, extremely rapid growth; whereas, if excessive heat occurs at the last state, somewhere after the 17th or 18th day, after the chick becomes more like a warm-blooded animal, then the excessive heat has a tendency to delay the hatching because the chick is behaving like a warm-blooded animal, due to excessive heat and becomes slowed down in his actions.

As to whether I find any teaching in this book about the use of forced draft in connection with the groups of eggs in an incubator for the purpose of maintaining temperature and moisture conditions, somewhere in here he mentions the use of a fan and he mentions the use of bellows. It is on pages 184, 185 and 186. With reference to page 212 and the plate opposite to it, he was having trouble with excessive moisture and lack of ventilation, and so they introduced the arrangement shown down in the corner of Plate 8, and then by means of a fan or bellows, they could drive the air up through the barrel. In that barrel, as illustrated opposite Page 147, there were arranged various trays of eggs, one over the other. In the view shown opposite to 212, Plate 8, we have various trays of eggs that are shown on little carts that are placed in the main incubator building. There is a movable table that the eggs are pulled [fol. 441] out onto when they wish to turn them. They turned eggs and they controlled their temperature, they had forced draft and they controlled their moisture, as taught

by this book. The eggs were arranged in superimposed bodies, one over the other.

We use this book for the purpose of teaching our students at Wisconsin the fundamentals of artificial incubation, especially in the historical development of incubation. I think this is a classical book along that line.

With reference to the actual practice prior to 1915, in connection with incubation, I have here Professor King's book. Professor King was a professor at the University of Wisconsin, Professor of Soil Physics, quite a noted man, developed the King ventilating system, silo, cowbarns, and so on. He made a trip to China, and Japan, and Korea, and so on, and came back and wrote this book, which was published in 1911, and called "Farmers of Forty Centuries, or Permanent Agriculture in China, Korea and Japan." The copy I have is the Wisconsin University's copy because one of my students has my personal copy at home. I supposed I had my copy, but I brought this one. I have been familiar with this book, I should say, since 1911 or 1912, because I knew Professor King quite well. My copy is the one Professor King gave me.

On the subject of incubating and hatching, especially with reference to separate hatching, I refer to page 178. He shows a picture in a Chinese hatchery, four Chinese incubators in a room where there are thirty, each having a capacity of twelve hundred hens' eggs, and the eggs are put into thirty of these incubators arranged in two parallel rows of [fol. 442] fifteen each. Immediately above each row, and utilizing the warmth of the air arising from them, was a continuous line of finishing hatchers and brooders in the form of woven shallow trays, with sides warmly padded with cotton and with the tops covered with sets of quilts of different thicknesses. That teaches me as to the practice in China with reference to the use of separate hatching, that when they incubate the eggs, they put them in these incubators, and put them up in this contrivance above to hatch them. I, myself, in our own hatching work at Wisconsin, practice this same principle of separate hatching.

As to the physiological reasons for separate hatching, during the latter part, after the embryo becomes more like a warm-blooded animal, its requirements for oxygen are increased, and it is also highly important that the egg be kept moist. Many of the small incubators we had years

ago were a failure because of so many of the chicks would dry and stick fast during the hatching period. As to the period of maximum mortality for chicks, so far as incubation and hatching periods are concerned, ordinarily you have a tendency to have two peaks, one occurs sometime during the first four days, and the other peak occurs during the last four days. As to which is the larger peak of the two, it is highly variable in our experience, owing to what type of deficiency you happen to be working with and how extreme this deficiency is. I refer now to our work on various vitamin deficient rations fed to hens and so on which has occupied a good deal of my time during the last year. One of the most important periods is the last three [fol. 443] days, so far as mortality is concerned. I think that is the result of most investigators, either you have two peaks, one in the first part and one in the last part of the incubation period.

The Court: It appears from this publication here the eggs are kept for eleven days in one lower incubator and for ten days in what they call the finishing tray, so they divide them there, evidently, into two periods, is that it?

A. That is it, yes. You will find Reamer tried a number of different methods.

By Mr. Toulmin, Jr.:

Q. Of separate hatching?

A. Yes.

The Court: This is the system that is recently employed amongst the Chinese?

Mr. Toulmin, Jr.: The date of that book, I think, your Honor, is 1915.

The Court: 1911.

The Witness: 1911, but this is an old, old custom in China, it goes away back.

The Witness: I have had occasion to take prior heating and ventilating patents and have built constructions in accordance with them and then attempted to incubate eggs in those heating and ventilating structures. What I call No. 1 is the J. K. Proctor apparatus for ordering tobacco and its number is 553723, Defendants' Exhibit No. 61 down here in the demonstration. We built this Proctor machine,

finished it August 29th, I believe. At any rate, we put [fol. 444] eggs in it on August 30th. I have here the photographs so that I can identify the structure. This is the outside of the machine. In order to identify it on the official exhibit No. 58, the first group of photographs represent the machine in which I did the work. We put eight trays of sixty eggs each on the rack shown in this third photograph.

The Court: On the left-hand side.

The Witness: Well, we put part of them here and part of them here (indicating), and of those 480 eggs, there were 135 infertile, which gave us 345 fertile eggs, from which we hatched 231 good chicks, so that we hatched 66.9 per cent. of fertile eggs.

The Witness: I think that is the satisfactory commercial hatch at that time of the year. I was doing it in September, 1933. The hens were moulting and fertility was low, and at the same time you do not get quite as high a hatchability as you would like. The normal season of the year to do hatching, with us, is March, April and May. The average weight of the chicks was 8.25 per hundred, for the trays located on the left-hand side, and 8.36 for the trays on the right side of the machine. We consider eight pounds per hundred standard for good chicks thoroughly dry and these chicks were thoroughly dry when we weighed, in fact, the Wisconsin regulations require that they weigh eight or more. These chicks weighed more than eight pounds; 8.25 and 8.36. We examined the chicks for com- [fol. 445] mercial quality and considered them satisfactory commercial chicks. In my judgment they were satisfactory commercial chicks and we kept them and brooded them for two weeks with only a small loss. I had never attempted to incubate and hatch in this particular machine before we made this test. All we did then was to put the eggs in the machine and let it go. We put the eggs in on August 30th, September 3rd and September 7th, but we were unable to finish hatches that went in September 3rd and 7th, because the machines were taken away and shipped down here.

The Court: How were the trays separated?

The Witness: We put tags on each tray.

The Court: I mean separated as between themselves.

The Witness: Well, a slide arrangement, so they slide right in, one above the other.

The Court: I thought there was a larger separation.

Mr. Toulmin, Jr.: They were placed in racks somewhat like the one shown a minute ago.

The Court: The same racks used for drying tobacco.

The Witness: No, in the tobacco machine they show those racks farther apart. We simply put cleats in there and substituted——

Q. You substituted for the rods where the tobacco hangs, the egg trays slid in on shoulders?

A. Yes, sir.

[fol. 446] The Witness: I was there when the eggs went in and was there several times during the progress of hatching, was there and candled out the infertile eggs; was there and unpacked the chicks after the hatch was complete. I simply showed up there without appointment, they did not know when I was coming out, whenever it suited my convenience to get over there and to look and see what was doing. The James people were not always present when I was there. A number of times I was in the place without seeing any of them that I knew. I was present when those photographs were taken, that I have been referring to here.

I have here my original notes that I made of these tests so they can be put in evidence if necessary. Everything else is here. This is simply the note book I carried with me. It has a lot of records of egg hearings and various other things in here, just a working notebook showing what I did each time. I have kept in that notebook the records of other tests of other machines I am now going to describe. They are all here from day to day.

I will now take up the second machine, made in accordance with the second patent. That is the C. W. Schwartz, Jr. method of and apparatus for ordering tobacco, Patent No. 535,175. This particular machine in question is the one marked 62 over in the store room. We made an internal truck arrangement for holding the eggs, similar to the one in the Proctor machine. We substituted for the rods and tobacco hanging down, sliding trays on the same [fol. 447] trucks, and simply slid the eggs in the same as we did in the Proctor machine, and on August 30th we put

in nine trays of sixty eggs each, five hundred and forty eggs. Of these 540 eggs, 109 were infertile, leaving us 431 fertile eggs and from these 431 eggs, we hatched 313 good chicks. That is 72.6 per cent. of the fertile eggs hatched. These chicks were a little bit heavier than in the other machine; they weighed 8.89 per hundred, the chicks on the left-hand side, and 9.08 per hundred chicks on the right-hand side. We also had three trays of eggs we put in the Schwartz machine on September 3rd, and three trays put in on September 7th, but we were unable to finish, so we simply candled them and transferred them over to other equipment, and that is all we did.

We took photographs of this machine, both as to construction and as to the stage of setting, incubation and hatching. I have my copies here. We refer now to Exhibit 58, the second group of photographs. I was present when these photographs were taken, and was present when the eggs were set. I made visits at unannounced intervals during the progress of incubation and hatching. I had something to do with the actual taking off of chicks from the hatch. I actually candled the eggs to remove the infertiles and unpacked the chicks shown in the photograph. I have here, in my original notebook, the record of the various pieces of data that I took off as this test progressed.

No. 3 is the G. E. Goldstein apparatus for curing and artificially aging cigars, and it is No. 1,137,752. The Goldstein machine is marked Defendant's Exhibit 63 over there [fol. 448] in the warehouse. On August 25th, we transferred two trays of eggs into the bottom spaces of the Goldstein machine after we built it. These two trays consisted of 188 eggs each, or 376 total eggs originally. From these 376 eggs we had candled out 87 as infertile, leaving 289 eggs that were transferred to the Goldstein machine and they gave a remarkably good hatch of 243 good chicks, which was eighty-four per cent. of the fertile eggs hatched. One hundred of these chicks weighed 8.45 pounds and another hundred weighed 8.26 pounds. The commercial quality of the chicks was satisfactory.

The commercial quality of the preceding chicks was satisfactory and the livability satisfactory on a two weeks brooding test.

On September 15th we took four trays of eggs which had been previously incubated in another machine and divided them equally into four trays of one hundred forty

one eggs each. That is, one tray we marked G-1 which we placed in the Goldstein machine and another we marked G-2 which we placed in the Goldstein machine. From the 141 eggs in trays G-1, we hatched 127 good chicks that weighed 8.52 pounds per one hundred chicks. Of the 141 eggs, fertile eggs, placed in tray G-2, we had 125 good chicks which average 8.33 pounds per 100 chicks. Then on September 10th we had placed 384 eggs in the Goldstein, which had to be transferred ten days later. We also put on September 12th, 141 eggs into the Goldstein which had to be transferred eight days later. I merely handled those eggs and found a satisfactory development in them and that is all. We stopped at that point because they took the machine away from us, to ship it down here to Court. [fol. 449] This run and that of the previous machines were during September, 1933. Eggs were started October 25th for that first Goldstein and eggs went in the incubator on August 28th for the second Goldstein hatch.

In my judgment as a professor of poultry husbandry, and a man who has had some practical experience with it, I would regard the hatches from these three machines satisfactory. Those are all the tests I have of those three machines, the Schwartz, Proctor and Goldstein. That is all I have conducted. They were not proceeded by preliminary tests. We placed the eggs in as soon as we could get them heated.

I was present when the photographs of the Goldstein machine, in Defendants' Exhibit 58, were taken. I was present when the hatches were taken off the Goldstein machine. I was present when the eggs were put in. I went to see the machine from time to time during the period of incubation and hatching.

As to setting the eggs in all three machines, in the Proctor machine, that was No. 1, we put in the eight trays on August 30th and then two trays on September 3rd and four trays on September 7th; and the Schwartz machine we did much the same thing except that we put in nine trays on August 30th, three trays on September 3rd and three trays on September 7th.

The Court: Did you turn these eggs by any means?

The Witness: I turned the eggs in the Proctor and Schwartz machines by pulling the carriage out and turning them by hand. We just rolled them in the trays.

[fol. 450] In the Goldstein machine we found it very easy to bore holes in the side of the machine, run a rod through and we had a very nice arrangement in that we could just put the eggs in a James Way incubator tray and push the rod through, which turned the eggs at one time, and go around on the other side of the machine and push the rod back in the opposite direction and turn them the next time; so in running the Goldstein machine we did not have to cool the eggs or handle them in any way at all.

The Witness: We have run tests on the James Way incubator, in connection with that James Way machine, without the front and back partitions forming the false back and false door.

The Court: You mean closing those so that there would not be any circulation through there?

Mr. Toulmin, Jr.: Taking off the two boards which your Honor will see in Exhibit No. 34, removing these two boards which constitute the false door and false back, at this point.

The Witness: On December 15th we put 102 eggs in the James Way from which we had just removed the inside partitions that form the air channel, those two boards, the one on the front door and on the back, took them out, and of the 102 eggs, 14 were infertile, which left 88 fertile eggs, and we got 73 good chicks, 15 dead and pips. We hatched these chicks after we incubated them in this machine in the regular hatcher. We followed the same procedure in [fol. 451], this as we do with the James Way ordinarily. They were simply in this 18 days. Then they were moved over to the hatcher and hatched in the regular way. Then, we had another section of a James Way in which we took off the boards in the same way and we put a piece of cloth to cover the first couple of trays. That cloth was about six or eight inches deep. For instance, that just hangs down enough to cover the two upper trays.

The Court: The top, you mean.

The Witness: The top and in that machine we also put 102 eggs. There were 13 infertile, leaving 89 fertile eggs and we got 77 good chicks.

The Court: What is your claim for that? In the other machine the curtains are on the bottom two layers.

Mr. Toulmin, Jr.: The curtain in the Smith patent goes clear to the bottom.

The Court: I mean the curtain in this little vault between the trays.

Mr. Toulmin, Jr.: What we claim for that is that it shows in addition to having those boards there for forming an air chamber, for insulation, following up what the other witnesses said, you can ultimately get a hatch out of a James machine with or without those boards, that the air travels down to the bottom, is turned by the turbulator in either event.

The Witness: We had 77 good chicks out of 89 fertile eggs, which is 86 per cent. of the fertile eggs. I have a record of that in my notebook. I supervised these two [fol. 452] tests of the James machine, as I did the other tests.

Defendants' Counsel then offered in evidence this notebook and it was admitted as Defendants' Exhibit 68.

The Witness: Nobody else can read it.

Defendants' Counsel then offered in evidence the photostatic copy of the title page and pages 178 and 179 of Dr. King's book, "Farmers of 40 Centuries" and they were admitted as Defendants' Exhibit No. 69.

The Witness: I have had communication with a Mr. Hastings, at various times, especially years ago, numerous communications, along during, I should judge, 1908, 1909, 1910, 1911 and 1912. Those communications were mostly by letter. I saw a publication at that time describing Hasting's work. About 1912 I think there was in Popular Mechanics, or some of those magazines, a story published of the incubator that he constructed and on or about that time he had sent me a record of the work that he had done in making a Mamoth incubator. These communications I had have been destroyed, as have a great many of the old records from our department. I think I would recognize those publications. The photostatic copy of the publication, the original of which is here in Court, "Popular Mechanics" magazine, particularly pages 630 and 631, numbered as Exhibit No. 24, is one of the publications I saw

in connection with Hastings in 1911 and 1912. There was a mimeograph or stencil letter by them in regard to it.

Mr. Toulmin, Jr.: That is all.

[fol. 453] Cross-examination.

By Mr. Ely:

Now with respect to these experiments we made in the James Way machine here, we took out the inner boards that constitute those corridor partitions or passage ways in the standard James Way machine and we put in the chamber that had been altered I think, 102 eggs. The capacity of that chamber when it is filled is approximately 2100 eggs. This experiment we made with 102 eggs was in a chamber which normally holds 2100 eggs. That was only a portion of a tray of eggs, just a small portion of one tray of eggs. Those 102 eggs were set all at one time. We took the air channels off from both sides then we put the short curtains down on the one and could not on the other and we just took the eggs as they came out of the crate, as the farmers brought them, and put one in one tray, and one in the other and slid those trays in there.

We took two trays, one went in on one side and one on the other, and we sorted our eggs by putting one egg into one tray and one into the next and so on so as to get an even distribution of the eggs. We set all 102 eggs in one day. We put 102, if that was the number, we put 102 in one tray and 102 eggs in another tray, and we slid one of these trays into this compartment with the short cloth hanging down and the other end did not have the cloth. At the time this experiment was made, we had altered the compartment by removing the partitions altogether, and we altered the other compartment by removing the partitions and putting curtains down from the top. At that time we had 102 eggs in one side and 102 in another side, that is 204 eggs in [fol. 454] the whole machine. The capacity of the whole machine, approximately, was 4200 eggs. Our experiment was made with 204 eggs in a machine with a capacity of 4200 eggs. Those eggs were all set on one day. We did not have a condition there where the cabinet was full of eggs as in normal operation. We did not have eggs set at various stages of incubation. They were placed in the upper part

of the chamber, next to where the curtain was to come, the top two layers. We did not place these eggs in the lowermost trays. All egg trays were right opposite each other, at the same level.

We kept them in that position during the incubation period and then on the 18th day we took them over into the Jamesway hatcher, that is into the two Jamesway hatchers, took them off these trays with cradles in and put them on flat trays and put one group into one hatching space and another group in the other hatching space. We did not make any similar experiment with the incubator full of eggs, with the regular complement. What would happen if we had that situation, I could not say. We did not make any other changes in the incubator for these experiments. We simply removed that board arrangement in the back and in the front and put curtains in on the one side.

Q. Then your experiment was really of no value to determine what might happen if you tried that sort of an arrangement with the incubator full of eggs, in other words, you did not find out what would happen in that case?

A. We did not run it full of eggs, no.

The Witness: As to how close we placed the crate holding the eggs to the side walls, on account of the turning [fol. 455] device we put it right back into its regular position. There is an iron rod goes through and you just push the turning device with two fingers which hook onto that iron rod. The edge of the tray would be about three inches, a little more, perhaps, somewhere around three inches from the wall. It would not be more than that with the partition out, not the way we did it, because there was a piece that went up and down and that we did not bother to remove. We just simply took off the inside bolt, so that the insulation stuff that forms the inside of that channel is, as I remember it, about a half an inch thick, and that is what we removed.

I have a copy of the Proctor patent, 553,723, before me. The mechanics there in the James Company built these various machines, the Proctor, the Schwartz and Goldstein machines I have been testifying about. As to having anything to do with superintending the building of the machines, I did and I did not. I was in the shop two or three times while they were building them, and what I did was simply

to turn this set of plans over to the shop and they went ahead and built them. I did not check the machines after they were built to see if they were in exact conformity with the structure shown in the patent. I think I simply saw them done. I do not know whether these experiments made in the Proctor machine were made with a machine identical with the showing in the Proctor patent, but they were built by good workmen. I know that those machines were like the machines shown in the Proctor patent. I would hestitate to say any two things on earth are identical. The [fol. 456] process of ordering tobacco to which the Proctor patent is directed is a matter of getting moisture in the tobacco so that it will be in the condition they want. It is a process of putting moisture in tobacco that is too dry. Moisture is put in the tobacco so that it can be handled without crumbling. As to it being a process peculiar to that particular industry, the tobacco industry, I believe that perhaps some other industry—I cannot recall now—that is entirely out of my line.

In incubating eggs we like to have a loss of approximately thirteen per cent. of their weight during the eighteen days of incubation. That loss of weight is due to evaporation of water in the egg. Water is not added to the egg in the process of incubation. You must permit some water to evaporate. In the process of ordering tobacco, you are adding water to the tobacco.

In this Proctor machine in which these eggs were incubated we applied heat. We had some heating mechanism. I do not find any reference to a heating mechanism in the Proctor patent. We simply put electric heating rings in that machine to bring it up to the temperature we wanted. As to changing the machine of the Proctor patent by putting heating mechanism in it which is not in when ordering tobacco, I think that is right. In that respect the process of ordering tobacco is different from the process of incubation.

In incubating eggs, a certain amount of fresh air has to be supplied so the embryos can breathe through the shells. You have to carry off carbon dioxide. Tobacco, in ordering, probably does not breathe oxygen and throw off carbon dioxide. When you order tobacco, dry tobacco does not [fol. 457] breathe oxygen and give off carbon dioxide. That is not found in ordering tobacco. I do not find any refer-

ence to the admission of fresh air to the machine. As to this being another respect in which we have changed the machine of the Proctor patent in order to make it hatch eggs, the only provision we have when running the machine for the entrance of fresh air was the channels the track runs on because actually we did not close them up. That was where the air got in, some leakage around the doors.

The patent shows where the wheels run on that track and in order for wheels to run on that track you must have an opening there. You must have an opening for that wheel because the track, in order for that wheel to run on that track, there must be an opening there. You open the door when you wheel your carriage out, but you could not bring the bottom of the machine up smack against that track, because the flange on that wheel sets over the edge. Whatever opening might be there would be purely accidental as far as the operation of the machine of the patent is concerned. There is no purpose shown in the patent and nothing said in the patent about any fresh air getting in.

There is nothing said in this Proctor patent about setting eggs, or about setting eggs in stage incubation. I was looking over some of these different patents with a group one day, and I said, "I bet we could fix those up and hatch eggs in them all right", and that is what we went ahead and did.

Q. Are you aware of the fact that in some of these other cases they have put in the same sort of testimony and the [fol. 458] patent has been held valid over it, are you aware of that fact?

A. I am not aware of that fact.

I never tried the experiment of taking this Proctor machine, of patent 553,723, and putting eggs in one compartment and tobacco in the other, and then running the machine, ordering the tobacco in one side and incubating eggs in the other. As to what would happen to the eggs if you had a machine running for ordering tobacco, I would have to try it to see. You would not hatch eggs under such conditions without heat.

Q. If you ran the machine described in the method of operation, you could not hatch eggs in it?

A. I could not hatch eggs without heat.

The only ventilation we had was what came in there. We had to add heat.

The Schwartz patent is for ordering tobacco. It must have heat for incubating purposes. In the Schwartz patent there is some provision for putting excessive humidity in the air. The air is driven down over this arrangement so that the air will become extremely moist and it circulates around and up through. Schwartz describes the use of a cool draft of air and having that cool draft of air come in contact with a warm body of water so excessive humidity will be put in the air. The purpose of the Schwartz patent is to add moisture to the tobacco in the process of ordering. In the process of incubating eggs, the idea is to permit the eggs to dry out slowly in the incubator. To incubate eggs in the Schwartz machine we could not use the amount of moisture they do in ordering tobacco. That is one of the principal differences between ordering tobacco and incubating eggs.

[fol. 459] I do not think there is any statement in the Schwartz patent about the need for fresh air in that machine. The Goldstein patent is for a machine for putting moisture into cigars.

In the Goldstein machine over in the warehouse when we looked at it the other day they had two ventilation openings in the back, slides, very similar to those used in the James Way machine. I do not find those anywhere in the Goldstein patent. Referring to the picture of the Goldstein machine, I am not positive whether the proportions of the fan in the Goldstein machine follow the proportions of the fan as shown in the patent. On comparing Fig. 1 of the Goldstein patent with my photograph of it I find we have in that Goldstein machine as built, a much larger fan than shown in the patent.

Q. What is the size of the fan in that?

A. Well, I don't know, it is a 12, it is a multiple bladed fan, it is a several bladed fan. My memory—I have not looked at that in weeks, but my memory is it is 12 or 14 inches.

In the Proctor and Schwartz machines we carried the process of hatching through to a conclusion. The first batches of eggs that were put in were carried right straight through, but there was no complete run from the beginning clear through to the finish with the Goldstein. With the Proctor machine, the record shows, as I gave, that 480

eggs went into the machine on August 30th and they stayed in the Proctor machine until the hatch was finished. They were not taken out and put in the James Way hatcher, not the ones in the Proctor, nor the Schwartz; that was true of the no air channel and the short air channel.

Mr. Rinsell, our engineer, says there is no fan in the [fol. 460] James Way machine. He says there is a propellor at the top of it and a turbulator at the bottom. I don't know the size of the propellor at the top.

With regard to the book "Farmers of 40 Centuries", in the operation described in this book, eggs are placed in some baskets or large wicker hampers or something of that kind, as shown in the picture on page 178. Heat is applied by the burning of charcoal. The eggs are kept in those baskets for only eleven days. As described in this publication, at the end of the eleven days, the eggs are transferred to the trays where they are hatched. It says that on page 179.

I taught my classes that the developing embryo gradually absorbs less and less heat and that up to the eleventh day it is not giving out so much. Those eggs in the hampers beneath would not be giving out any animal heat. They would be absorbing heat. When this pamphlet or booklet says that the eggs in the upper tray are utilizing the warmth of the air arising from the basket, they are talking about the warmth of air generated by the charcoal burner or whatever they have in there to furnish heat. This operation, described in this publication, is not using the heat of the embryos in the latter stages of development to supply heat for the embryos in the earlier stages of development.

Recess until 2 P. M.

Proceedings After Recess, 2:00 P. M.

This old book DeReaumur published in seventeen hundred something, on the art of hatching and bringing up [fol. 461] domestic fowls, starts out with a discussion of the methods of hatching used by the Egyptians on the Delta of the Nile. He mentions people that went down there, made trips, and came back with information concerning what the Egyptians were doing.

The Cult that engaged in the hatching of eggs in Burma kept their process more or less secret among themselves.

It was handed down, as I understand it, from father to son, by the Burmians, so the secret of operating these ovens was handed down from generation to generation.

I think this book, in discussing the Egyptian process, discusses what had been pieced together by information received from various sources. It says that so far as he had been able to find out, the Egyptians carried on the process in what they call large ovens or what they called Mammals. I recall those Mammals, as he described them, or ovens, were arranged perhaps in large rooms or houses, because there was a horizontal partition dividing the room into an upper and lower floor, with a passageway in the center and then these places for the eggs at two different levels on either side of this central passageway.

As far as they have been able to find out, the process of hatching consisted of placing eggs in chambers all at one time at the start.

They applied heat, built a fire of dried camel dung and other material. That heat was applied to the chamber for a certain number of days, about half the hatching period. First I think they carried it around somewhere near the twelfth to fourteenth days of incubation. Then the Egyptians, as far as he could find out, put the fire out and spread [fol. 462] the eggs, took some of the eggs from the lower floor up and put them out on the upper floor and let them hatch there, spread the eggs out, in other words. That is what he found in his investigation of the Egyptian process, substantially so. They have a very mild climate there and could do things we could not do here.

As to the Egyptians being very successful in that process they carried on, I believe several times here the statement is made that the operator of this mammal or egg oven was supposed to return two chicks for each three eggs brought in.

It was a very profitable business as carried on by these Burmese. I think that was what inspired this man to go ahead with his experiment on artificial incubation. He was seeking to duplicate in France things done by the Egyptians on the Delta of the Nile. He claimed to have had some very good hatches with some of his machines and especially that he heated with heating horse manure and other decaying vegetable matter.

I remember he said somewhere here that he was doing as well with his machines as he was with the chicken hens as incubators. The book says (p. 191): "I have kept for that time an exact account of the eggs I have given my hens, and of the chickens hatched out of them, but I think I have had more unfortunate broods than is customary to have and that the accidents against the experiment have been more frequent and in greater number with me than they generally are. The product of chickens for each of these years has been less than a third part of the number of the [fol. 463] eggs; but I think in general, that it will not be underrated, if it is allowed to be equal to one-half of the quantity of the eggs sat on; it is well proved at least that it ought to be rated under the two-thirds of the number of eggs, supposing that the products of the Egyptian ovens have not been underrated."

That indicates to me that he never reached the perfection which the Egyptians had, in his whole life, but I think it would be expected, because under his climatic conditions, his eggs would not be likely to hatch as well as you would get down there on the Delta of the Nile. Whatever excuse or reason, he states here during the whole time he got less than one-third of the number of chicks out of the eggs.

I think that is substantially borne out, he says he does as well with his incubators as he does with his hens.

He only got about one-third production with his hens. As near as I can read, he just about had tied with his hens and incubators. He did not approach the success of the Egyptians. When he first started out trying to duplicate the results of the Egyptians on the Delta of the Nile, he started out using bake ovens. In hatching eggs in those bake ovens, I think he had quite fair success at the one place where they baked frequently. Other places, I am saying this from memory, where they baked only, maybe, couple of times a week or something like that, he was not so successful.

He was experimenting the whole time with the use of bake ovens, trying to imitate the Egyptians. He was using the surplus heat from bake ovens in this work. As to whether he continued that, or went on to another scheme [fol. 464] after his bake oven experiments, as I understand the book, he was carrying out the two at the same time.

For instance, at this one place where he was using the heat of the bake ovens, the nuns also had his other kind of incubators at the same time, so that he was running both at the same institution, the bake oven incubator and using these incubators that at that time he made out of casks, so that he had them both going. I think in one place he says that the sisters favored the decaying vegetable matter casks to the bake ovens.

I take it that the bake ovens were not the last word, as far as he was concerned. He apparently was much more interested and spent much more time apparently in building these incubators to be operated with decaying vegetable matter, and he takes up a good deal more space of the book in that. As to whether in those experiments he performed in the bake oven he used stage incubation, I have not looked for it in the book.

In those experiments on the bake oven proposition, he did not use a fan. As I read the book, he was carrying out experiments of the bake ovens and the casks at the same time. He carried on the experiment of hatching eggs in the barrels. He hung eggs in the barrels and sometimes hung straw in the barrels. He put the barrels over and then surrounded the barrels with this decaying vegetable matter, horse manure. He covered these barrels in a deep bed of horse dung. He got his heat from the heat of the decaying horse manure or other material he used. When it got cool, he added more of what he called hot [fol. 465] manure. If it got too hot, he covered up this pile of manure with planks and one thing and another to cut down the fermentation. He did not get very good results at the first; he had excessive moisture. He found he had a lot of chicks dying in the shells. He attributed that to the smell of the manure. He said the air got so foul that he attributed the death of the chicks to the smell of the manure. He proved also, when he set a hen on the manure pile, that her eggs hatched all right. In that case the hen was not covered over with manure where the cask was.

He had lined these casks on the inside with various things, plaster paris and other kinds of plaster, tar and various things, that was supposed to keep the fumes from coming through. He finally decided the fumes were so bad in there that it was killing the chicks and then he built a different kind.

Q. Then he suggested putting a fan in to take the fumes off; do you find in there that he actually said he did use a fan or he might use a fan, I wish you would look and see?

A. He said on page 185——

Q. Yes.

A. He says that——

Q. He says that "one which I have not as yet made use of, but which cannot but be good, is to have the air renewed by means of any ventilator whatsoever; you might make a pretty good one of a fan many feet long, and as wide as the height of the ceiling would allow. There are a thousand ways of disposing such a fan so that one might make it move quickly enough; it may be made of thin boards or with pasteboard; and it will sweep away that air that has stagnated too long in the place, and will [fol. 466] force new air into the place of it." That is correct?

A. That is correct.

Q. He apparently never did use a fan which he thought he might use, is that correct?

A. That is true in that paragraph. In the next paragraph:——

Q. In the next paragraph he speaks about using a pipe which he might put in the cask or which he did put in the cask and then when the air got too bad inside the cask he would blow the air out and blow fresh air in?

A. That is right.

His idea was to get away from the vapors and odors given off by the manure. The air was blown through to get rid of the excess moisture.

Turn to page 154 in this book, about the middle of the page:

"The first brood was much more considerable than those which came after, it consisted of about sixty eggs which had been collected beforehand; this is not mentioned on my journal which I had not as yet begun. But notwithstanding all I had hoped from it, on account of my having always found the eggs in the proper degree of warmth, and to appearance perfectly dry, I had nevertheless but three or four chickens from the whole number."

"I attributed this bad success to some remainder of moisture in the plaster of the oven."

Turning to page 62 of the book, it says:

"But the accident I experienced from the excess or from [fol. 467] the want of a proper degree of heat, were not what stopped my progress in these attempts; I even attributed some to these two causes that proceeded from one another and that in the very first brood. The eggs of this, and those of a great many other broods, began at the eighth or tenth day to fail my expectations. I had till that time found the chickens as much forward as I could wish, in the eggs I had broken; the scene began to change afterwards, and the bad smell that this diffused itself all over the oven, informed me that some of the eggs at least had contracted an infection there. These were easily distinguished from the rest; for, the matter that gave them that fetid smell, by being rarified, had burst the shells of several of them, and run out; and the same matter, without breaking the shell of others, had made its way out of them through the natural pores of the shell which it had only widened. These rotten eggs were all carefully taken out of the oven the next day, but it was full of stench, no less offensive than that of the day before, and I then found again as many broken or rotten eggs to be taken out as there had been at the last examination. Every day continuing thus to supply me with more rotten eggs, I was compelled to conclude from it, that some fatal accident had happened to them all, and that I did myself no injury in breaking the remainder of them, though they had not as yet given any tokens of corruption. All the eggs [fol. 468] which ought by this time to have contained forward chickens, diffused a most offensive smell as soon as the shells were opened; the chickens in them were dissolved and reduced to a kind of black liquid paste in some and to a greenish one in others; they were, however, entire and pretty large in some of them, and already covered with feathers in a few others.

"I should have been tired too soon if I had been disgusted by the bad success of my first brood. It seemed even to promise better, since I was advanced so far in it as to cause chickens to be unfolded and to grow for fourteen days together, as well as they would have grown and been formed if the eggs had been kept all that time under a hen. Since these eggs had in fact been properly warmed during two-thirds of the time they ought to have been so,

there appeared sufficient hope, that by redoubling my attention I might afterwards arrive at a method of warming them with equal success during the remaining third of the time they were to have been in the oven."

Turning over to page 157, it says:

"But why, some will ask, does the moisture, which did not hinder the germ from unfolding itself and from growing, and which had not hindered the chicken from being formed, yet make it die afterwards, sometimes sooner and sometimes later? and why is it more commonly fatal to [fol. 469] it, when it has almost attained its full growth, than at any other time? Can a mere watery dampness be capable of producing such dismal effects? Does not the moisture which kills the chicken, poison it with the sulphurs and volatile salts it is impregnated with, and which have exhaled from the dung? Why, in short, are there chickens that resist this vapour, and are hatched at last whilst a much greater number of them are destroyed in their shells, although the eggs of them all have been warmed in the same basket, and one as much like the other as possible?"

I would not like to operate under the system described here in this publication in our incubators out in Wisconsin. I have always thought I would like to try making one of these and see what success we would have. We do not operate under any such scheme as is described. Modern engineering has given us an easier way of doing things.

Q. Exactly so. Now, Professor, have you ever experimented at your place, your place is the Wisconsin University?

A. Wisconsin University.

We have never experimented in the Wisconsin University to determine whether or not this B. W. D. is spread in so-called still air incubators. We have simply followed what this man in Kansas discussed. We have not made any independent investigation of our own.

The Court: Have you not ever made any investigation into the cause of this disease in your poultry department? [fol. 470] The Witness: Yes, your Honor, we have carried out pullorum disease studies, but nothing to do with incu-

bator spread. Our project has been Cornell project 307, and was discontinued about a year ago. We spent about six or seven years on this disease, but there was no incubator spread studies made in our project.

Q. You know, however, considerable study has been made by the Agricultural College at the Experimental Station in Maryland to determine the spread in the incubators?

A. Dr. Bunyea?

Q. Yes. You also know that has been compared with the spread of B. W. D. in products, too, when comparative tests have been made?

A. I heard Dr. Bunyea lecture two or three years ago on some of that work, but I have not seen any recent reports of it.

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GLEN F. RICHARDS, a witness for the defendants, testified as follows:

Direct examination.

By Mr. Toulmin, Jr.:

I am manager of the Poultry Division of the Northwest Branch of the James Manufacturing Company, located at Minneapolis, Minnesota. In the course of my work I have contact with the customers of the James Company in a practical manner. Part of my duties are to make contacts with the customers in connection with sales and service and the direction thereof.

As to my experience and education in connection with [fol. 471] poultry matters, after finishing high school in 1908, I took a four-year course of college work at Palmer College and Iowa State Agricultural College, and I am a licensed poultry judge, and have judged a great number of shows in the Middle West. I have had no special education in connection with Embryology of Chicks other than that which comes in the regular science course.

I specialized in agriculture, and poultry husbandry.

Whether, in the light of my educational experience and my personal experience in the trade, there is any difference between the first, the first to seventeenth day and the last three or three and one-half days in the incubation and hatching of a chick—the terms "incubation of hens' eggs"

and "hatching of hens' eggs" have been rather loosely used in a synonymous way and as applied by the public and poultry people by and large, meaning simply the process of bringing a fertile hen's egg to complete development from which a chick would emerge, but there is a distinction as to the period of development of growth and so forth of the germ, from the time it is placed either under the hen or in an incubator until a complete chick is developed therefrom and emerges from the shell. As Professor Hutt brought out, there are four stages, which is quite correct, but there are two, each of them making up the two common stages, commonly known in the process, that of incubation, which might be said to cover from the first to seventeen and one-half or eighteen days or thereabouts, and the second general stage, from then until the chick has emerged from the shell and it is a complete ani- [fol. 472] mal, to meet the world as any complete animal does, fully formed. This last period properly is called hatching and the preceding period is properly called or termed "incubation".

As to having technical authority for that distinction on which to base my statements, I refer to the work of Dr. Frank Lilly, head of the Department of Embryology of Chicago University whose text I have here. This is a standard work in all schools teaching Embryology. It so happens that the development and growth of the baby chick is studied as foundation material for studies going in various and practically all of the phases of Embryology and as foundation material thereto.

I am referring now to the text "The Development of the Chick" by Lilly, published in 1908. I have photostats of the pages I am going to refer to. They are these assembled in a set.

I refer to part two, where the Embryonic Membranes have started to appear or form and the illustration thereof, toward the bottom of page 211. You will see the embryo of the chick at three days and sixteen hours of incubation, as per the experiments of Dr. Lilly. Then passing on to pages 218 and 219, I should have said, showing still further stage.

At page 219, and the description of 218, the figure 127 represents the fourth day of incubation. Figure 128 represents the ninth day of incubation. At page 220 you will

see the stage which represents the period or the point of development where the chick is no longer an endothermic unit but rather an exothermic, or the time when more heat is being given off than is being absorbed by the growing [fol. 473] organism. That is the twelfth day.

As to the distinction between hatching and incubation, at page 232, beginning at the top of the page, is a summary of the various stages and he proceeds at the beginning, at the top of the page as follows:

"About the 14th day the growing embryo accommodates itself to the form of the egg so as to lie parallel to the long axis with its head usually towards the broad end near to the air-chamber. Sometimes, however, the embryo is turned in the reverse position. The head is bent towards the breast, and is usually tucked under the right wing."

The next sentence is where I am going to call the attention of the Court to the distinction between "hatching" and "incubation".

"Important changes preparatory to hatching take place on the seventeenth to the nineteenth days. The fluid decreases in the amnion. The neck acquires a double bend so that the head is turned forward, and, in consequence, the beak is toward that part of the membranes next to the air-chamber. The intestine is retracted completely into the body-cavity, and on the 19th day the yolk-sac begins to enter the body-cavity. On the twentieth day, the yolk-sac is completely included, and practically all the amniotic fluid has disappeared. The chick now occupies practically all [fol. 474] the space within the egg, outside of the air-chamber. The umbilious is closing over. The ductus arteriosi begin to contract, so that more blood flows through the lungs."

You will note there he states "More blood flows through the lungs", indicating the process is not yet complete, where the chick is a complete lung breather, which is impossible until the chick's lungs are completely filled with blood.

"The external wall of the allantois fused with the chorion still remains very vascular. Now, if the chick raises its head, the beak readily pierces the membranes and enters the air-chamber."

At that point or very near that point, is where the chick becomes a breathing animal. That occurs in the last three days of the transaction, toward the latter part of the last three days.

"It then begins to breath slowly the contained air; the chick may be heard, in some cases, to peep within the shell two days before hatching, a sure sign that breathing has begun."

That is quite evident that peeping represents essentially the necessity of air, and then, of course, the chick would have to have been an air breather before peeping could have taken place, showing a sign that breathing has begun.

"But the circulation in the allantois is still maintained and it still preserves its respiratory function. When the [fol. 475] chick makes the first small opening in the shell, which usually takes place on the twentieth day, it begins to breath normally, and then the allantois begins to dry up and the circulation in it rapidly ceases. It then becomes separated from the umbilious, and the remainder of the act of hatching is completed, usually on the twenty-first day."

That is the conclusion of the book.

As to the external conditions that have to be taken into account in accommodating the artificial incubation period from the first to the seventeen and one-half days, the final three or three and one-half days, inasmuch as the process is different, the requirements or environment, that is the best environment for it would naturally follow to be somewhat different, particularly with reference to humidity and temperature.

With respect to the differences as to temperature control that you must have for the last three or three and one-half days, as compared to the first seventeen days, based on my experience in the field, a slightly higher temperature is preferable, likewise somewhat of an increase in humidity.

In our James machine we carry a temperature that ranges from 102 to 104 in the hatcher as distinguished from about 100 or 100½ in the incubator. Our users are directed to maintain and operate with temperatures of 102 and 104 in the hatching compartment, gravity ventilated compartment, and with a temperature of 100 and one-half in the

incubating compartment. I find those instructions followed in the field.

[fol. 476] As to the wet bulb temperature, I might call your attention that our operating instructions have to be of necessity somewhat general to cover all sections of the country. We ship incubators to all parts of the United States, and there are certain climatic conditions that have a slight influence, but humidity running from eighty-two to eighty-five is the common practice.

In our hatcher is provided a moisture pan that covers the entire floor of the compartment and directions or reasons are given that this pan be filled and kept filled with moisture at all periods of hatching.

In our incubator the moisture is also supplied by open pans with adjustable or movable covers on them and the air passes over these pans, being agitated by the impeller, and picks up its load of moisture as it passes down the back and rear, that is, the portion of it that passes down the back and front channels into the egg chamber.

In the James Way incubator the moisture is regulated by the amount of evaporating surface area and you control it by the adjustment of the covers, moving them to the front or rear, increasing or decreasing the amount of surface opening.

We adjust the amount of moisture by sliding the covers or tops of the water pans to the amount needed. That is the practice of our customers in the field.

We do not make any effort to conserve the amount of moisture used in our machine other than by adjusting the top of the water pans with the number of eggs in the cabinet. In size our pans are equipped for any amount of [fol. 477] moisture needed and water, being plentiful and cheap, no attempt is made to cut down on the use of it within a reasonable degree. Excess of moisture as distinguished from an under amount of moisture for a reasonable amount of time, will not injure incubating eggs. An excess is not as injurious as a deficiency thereof, that is, humidity within the egg chamber.

If water is once taken out of an egg it is impossible to replace it.

As to the practice by our customers as I have observed and as is recommended by the James Company, respecting the regulation of the amount of moisture there shall be in

the egg, the best condition is the exact amount it needs for a given time, but we do caution the customer for two extremes, it is better to under-evaporate than over-evaporate. This means it is better to have too much than too little moisture.

Regarding controlling the moisture by the slides, in the front of the incubating cabinets are four exhaust openings or ports and these are used to adjust or control the air purety or the amount of air that passes through the compartment, largely depending upon the amount of eggs or the amount of air or free oxygen needed for the eggs in the cabinet at a given time. If there is less than a full load in the incubating cabinet, it is customary to have these openings considerably closed. As the number of eggs increases, as they go into the cabinet, the amount of these openings is likewise increased in the adjustment thereto.

If you have a dry climate like Colorado, in an emergency of that character, we suggest that a certain amount, that is, of course, it depends, we open it up as much as possible [fol. 478] and these slides in such cases may be pretty well closed but never entirely closed, always providing for the admission and emission of a certain amount of fresh air.

On the subject of the authority for stating that there are two stages, one of incubation and one of hatching, I have one other book here by Professor Balfour, of Cambridge, England, published in 1881, entitled, "A Treatise on Comparative Embryology". From my examination, this publication, in my view, comes to the same testimony I have already given in connection with the Lillie book. It is very much the same as Dr. Lillie, though not quite so extensive. He covers the general field of Embryology.

(Counsel for defendants then offered in evidence the photostats of the first book, "The Development of the Chick", particularly pages 211, 218, 219, 220, 221 and 232, and the illustration opposite to it, and the cover page as well, and they were admitted as Defendants' Exhibit No. 70.)

(Defendants' Counsel then offered the title page and pages 164, 165, of the "A Treatise on Comparative Embryology by Dr. Balfour" and they were admitted as Defendants' Exhibit No. 71.)

Regarding my understanding, by observation, of the function of the so-called turbulator at the bottom of the

egg chamber or cabinet of the James incubator, it is for the purpose of mixing, stirring or churning the incoming fresh air or oxygen supply with the streams of air that come down the front and rear channels.

[fol. 479] As to having had any practical experience in the field with the operation or failure to operate of this turbulator in the James incubator and the results of incubation and ultimate hatching, I might call to your attention, during the first year incubators were in the field, which would be the hatching season of 1930, these agitators which are driven by a belt that comes from the main shaft down through the center of the machine, and in the first year that belt was made of a coil spring similar to the coil spring on a screen door, only at each end fastened, and that belt gave us some difficulty in some instances that year by way of breakage, some seeming to have been a little too hard, and it would snap, and others not tempered hard enough, and it would stretch, and in either case the agitator would not function properly or cease altogether, and in installations where the installation consisted of two or more units or cabinets, and where one of these would break and the non-operation of it not be observed by the operator for some period of time, we will say, two or three days, a lesser hatch of some five to ten per cent. would result therefrom.

In hatchery practice of the present day, that is of 1930, and since then, the effect on the hatchery profits, the loss of five to ten per cent. of the ultimate hatch is a very important matter in the commercial operation of a hatchery, inasmuch as a difference of five per cent. on an average sized hatchery, or any hatchery, for that matter, could mean the difference between financial success and failure for the operator.

I have heard here in this testimony, a discussion about BWD, I understand what that is; at least, I understand [fol. 480] something of it. I have had experience with that disease. I have had the personal experience in a normal way and have observed bacillary white diarrhea bring about disastrous effects to quite a number of poultrymen.

As to the method of distribution of this disease, as far as artificial incubators are concerned, a common authority for this, by way of research work, is a bulletin that was prepared by the experimental station at the Kansas State

Agricultural College, Manhattan, Kansas. I have read that bulletin.

The statement in that bulletin that the disease is carried by the so-called forced draft movement of air in the incubator where eggs are hatched is borne out by my own observation in the field, in connection with the statements of hatchery operators or purchasers of baby chicks.

This question of disease has very evidently received official cognizance in connection with baby chick hatchery men of this country recently, as it is shown by the recent hatchery code for the operation of hatcheries, both commercial and breeders, and this Code was approved by President Roosevelt on December 29th, 1933. I cannot answer definitely whether the hatchery men are operating under this code today out in the field, because I have been here at this trial pretty much all of the time since and hatcheries by and large, I do not think, are in operation, particularly in the section of the country where I come from.

[fol. 481] There is a chapter in this code devoted to this pullorum disease, or what is known as bacillary white diarrhea. You will find that beginning with Article 9, I believe, and continuing down through most portions of that page and then there is a further supplement to this code issued January 16th. The supplement was issued by, I believe, the Co-ordinator, under the Code of The International Baby Chick Association which is the supervising agent of the Commercial & Breeders Hatchery Code and with particular reference to Paragraph 21. I have no copy of that code. I will have to have photostats made.

(Defendants' Counsel then offered in evidence as a single exhibit, the copy of the official code and supplement bulletin from the International Chick Association and it was admitted as Defendants' Exhibit No. 72-A.)

(Defendants' Counsel then offered in evidence the Supplementary Bulletin to the Hatcherymen's Code, from the International Chick Association and it was admitted as Defendants' Exhibit No. 72.)

Mr. Toulmin, Jr.: You may have the witness, Mr. Ely, I am through with the direct examination.

Mr. Ely: What part of this code were you referring to?

Mr. Toulmin, Jr.: We were referring to starting at Ex-

hibit "A", and running on down and particularly to Paragraphs 10, 11, 12, 13, 14 and 15 and in Exhibit 72-B particularly Paragraph 21 of that bulletin.

[fol. 482] The Witness: I might have given that page number but I could not see it very clearly here.

Cross-examination.

By Mr. Ely:

Q. I do not find anything in these marked paragraphs of this code concerning forced draft and still air incubators or anything of that kind in that code, Mr. Richards?

A. It was not my intent to indicate that referred to incubators, Mr. Ely.

Q. This code has nothing to do with the operation of incubators, has it, this code?

A. It is hatching practice, the code is applicable to hatching practice.

Q. But I do not see anything there that says that must be hatched in any separate hatcher. Do you find anything of that kind there, in order that they may be advertised as blood tested?

A. You might, if you wish, Mr. Ely, read these few short paragraphs through.

Q. Go ahead and read what you find in there.

The Court: What do you claim for this Code?

Mr. Toulmin, Jr.: We claim that it is recognition of the fact that this disease is a vital question in hatchery operation, and then when you read that Code in connection with the supplement, paragraph 21 on 72-B, which reads as follows:

"When chicks are advertised from blood-tested parentage, they cannot be hatched in the same incubator or same incubators as are flocks not blood-tested."

[fol. 483] The purpose being to show you have to segregate this disease and this Code shows that is national recognition of that fact.

The Court: Does that mean in hatching?

Mr. Toulmin, Jr.: Yes, it does not make any difference, the birds as well as the method of hatching, you have to

have the separation. It shows the transmissibility of this disease.

Mr. Ely: Nobody disputes that. As a matter of fact, this supplement to the Code does not say anything about forced draft machines and that chicks cannot be hatched in forced draft machines.

The Witness: It has reference, Mr. Ely, purely to hatchery practice.

Q. That is to say, you must not hatch infected chicks in the same incubator?

A. Yes, sir.

Q. And that is true whether you use a forced draft machine or a still air machine, that portion of the Code covers both, does it not?

A. That, I take it, to be an acknowledgment that the disease is transmissible within the incubator.

You would violate the provisions of this Code just as well if you hatched infected chicks and non-infected chicks together in a still air incubator. It is not my purpose or province to interpret this Code.

Q. That Code means, and, you could violate the provisions of this Code by hatching infected and non-infected chicks in a James incubator?

A. I presume non-infected chicks could become infected under a setting hen.

Q. The purpose of this question is, you could violate this [fol. 484] Code just as much if you had infected and non-infected chicks in a James hatcher?

A. I take it this disease can be transmitted in an incubator.

Q. Would you not violate this Code just as readily or just as much, if you hatched infected and non-infected chicks in a James Way incubator, would you not then violate the Code?

A. It is quite impossible to hatch chicks in a James Way incubator.

Q. A James Way hatcher, then?

A. A James Way incubator, would, according to the Code, have to be in a separate room from where the hatcher was, in another room.

Q. Let us assume we have a James Way hatcher, we are not talking about incubators, but a James Way hatcher,

you set eggs in there, some are infected and some are non-infected, you would then be violating the provisions of Paragraph 21 of the Code?

A. If they were in the same room.

Q. If they were in the same hatcher, I mean?

A. The same hatcher in the same room.

Q. No, now. Wait a minute, please. Answer my question. Now, just concentrate on the James Way hatcher, one James Way hatcher, and I set eggs from an infected and non-infected flock in that hatcher, am I not violating the provisions of Paragraph 21 of the Code?

A. Well, I would like to answer that, Mr. Ely, by saying we don't set eggs in the hatcher, they are transferred to the hatcher at the close of the period of incubation.

Q. Do not fuss with me in the matter of words.

A. If you mean a sectional type incubator, I can answer your question.

[fol. 485] Q. Iam talking about the hatcher, that section on top of the incubator. 180 eggs go in that hatcher?

A. 210.

If we set 90 eggs from an infected flock and 90 eggs from a non-infected flock in that hatcher, we would violate the provisions of the Code, but in James Way practice we do not set eggs in the hatcher. If we put eggs to be hatched together, eggs from an infected and non-infected flock, in the James Way hatcher, I think we would be violating the provisions of that Code.

Even if you did that in the same room, I take it you would be violating the provisions of the Code. This BWD can be transmitted through the air in the room and it has been so held. I think it has not been held by anyone in authority that this BWD is communicable through the pores of an eggshell.

It is simply transferred from chick to chick after emerging from the shell. The presence of eggs in the first eighteen days, is not detrimental to the transfer of BWD. The chicks in the shell will not get the disease until they have reached the seventeenth or eighteenth day, or hatching stage; not until they are out of the shell or start to emerge; not until the shell is broken.

This mythical line between hatching and incubation that takes place, by most authorities, is recognized somewhere

between the 17th and 19th day. That will vary, depending on the breed of chickens, the subject of the incubation process, and so forth, just as to the exact period or hour.

Q. Now, you noticed this language says, "important changes preparatory to hatching takes place on the 17th to the 19th day".

A. Which language?

[fol. 486] (Mr. Ely shows page 232 of Defendants' Exhibit No. 70 to the witness.)

Q. You notice that, do you not? That is, what takes place on the 17th to the 19th day is preparatory to hatching and not hatching?

A. Preparatory to the hatching which takes place on the 17th to the 19th.

Q. Wait a minute.

A. As I read that——

Q. The important changes preparatory to hatching takes place from the 17th to the 19th day?

A. These changes take place, changes, Mr. Ely, are constantly taking place at every hour in incubation as well as hatching.

Q. Those changes referred to there from the 17th to the 19th day are preparatory to hatching, that is what it says?

A. I take it so.

Q. That is not hatching?

A. Everything which takes place during the first 17 days would be likewise preparatory to hatching.

Q. As far as hatching is concerned, they are all changes preparatory to hatching, these developments of the chickens are all changes preparatory to hatching, and then according to your interpretation of this document here, where does that mythical line, that place, where is it found?

A. The best answer would be at the time the chick begins to use its lungs breathing or partial breathing.

Whether that is on the 17th day depends on the rate incubation has taken place and also the breed of chickens from which the particular eggs would be from. The chick begins to peep sometimes as much as two days before it emerges from the shell.

That would probably be about the 19th day in some cases, [fol. 487] and some sooner. Some hatches will be completed before 21 days.

Q. It will be about 48 days before they actually come out of the shell?

A. You mean 48 hours.

Q. 48 hours before they actually come out of the shell?

A. 48 to 60.

Q. You notice, it says the chick may be heard in some cases to peep within the shell two days before hatching?

A. That would be 48 hours.

Q. According to this, the hatching would not occur until the 21st day?

A. The hatching is the process that each of these authors quite defines as that taking place approximately the last two and one-half days of the 21 days period.

Q. Now, wait a minute, you said that the chick started to peep about the 19th day. I notice this author says it starts to peep two days before hatching, so he must refer to hatching as the actual emergence of the chick from the shell, look at that?

A. If the peeping was taking place just before the chick emerged, but it could peep, and probably—I have heard it in my own experience two days before it emerged from the shell and it was a lung breather according to experience before it could peep.

I would not take the hatching according to this author, as the actual emergence from the shell.

Q. Notwithstanding that it says the chick begins to peep two days before hatching, and you testify the chick begins to peep on the 19th day?

A. As an average or general thing, about the 19th day.

The purpose of having those openings in the James Way incubators is to control the amount of air that passes through [fol. 488] the chamber; that is, to control the amount of air that passes out of the chamber, which, in turn, would effect the amount of incoming air. The air which goes out of the chamber necessarily carries moisture with it.

Q. And therefore if you cut down the amount of air which passes through the chamber you will save some of the moisture?

A. That will be obvious, Mr. Ely.

Q. Perfectly obvious, you can conserve moisture by

throttling the amount of air which passes through the chamber?

A. For an emergency.

Q. I am not talking about emergency, I am talking about the general purpose. You can throttle the air by regulating the amount of the opening?

A. That would be the result.

Q. And by reducing the amount of air which passes through the incubator to reduce the loss of moisture?

A. Yes.

Q. It is clear that if I open the air wide open and blew the air through I would blow all the moisture out of the incubator?

A. Depending on the length of time it was open.

Q. If I opened it and blew all the air out I would blow all the moisture out in a short time.

A. Depending upon the flow.

Q. Then by reducing the exit of the air, I reduce the amount of moisture lost inside the incubator, is not that so?

A. It has that effect, but by referring to the instructions you will note that the operator is cautioned never under any circumstances of emergency, even, to close those slides or openings entirely.

Q. That is because you have to have the same amount of [fol. 489] fresh air going through the machine too?

A. Fresh air is essential.

Q. And you have to have balance the requirements of fresh air for your chicks against the disadvantage or loss of moisture because you have too much air going through?

A. The use of those slides is not to balance air against moisture, it is to balance air against egg content of the chamber, the air supply.

Q. Nevertheless, that is what happens.

A. A certain effect to that effect would occur.

Q. You cannot get away from it, can you?

A. No, sir.——

Q. That is to say, ventilation should also be controlled to quite some extent by the humidity of the cabinet, is not that so?

A. No, sir, it is controlled materially, by the amount of openings in the James Way moisture pans.

Q. The ventilation, let me read you this "The ventilation should also be controlled to some extent by the humidity

of the cabinet as described in the last passage". Read that passage and explain what you mean by that? That is from the James Way Incubator Instruction Book.

A. Will you point that out again, please?

Q. It reads as follows "Ventilation should also be controlled to some extent by the humidity of the cabinet as described on the last page".

A. Yes.

Q. That means, does it not——

A. Then as——

Mr. Toulmin: Let him finish his answer.

Q. That means, does it not, that the ventilation and humidity have relationship?

[fol. 490] Mr. Toulmin: I submit the witness should be permitted to answer the question. He said he wanted to call attention to the next page.

The Court: His answer was directed to the particular language of the catalog, that was all.

Mr. Toulmin, Jr.: He wanted to make it clear by referring to the next page.

Mr. Ely: Do not worry, Mr. Toulmin, I will straighten that out.

Q. Does that not mean there is an essential relationship between humidity of the cabinet and ventilation?

A. Not for the purpose of ventilation, the opening and closing of these slides, Mr. Ely, I would say would have an effect on the humidity control but it is not the purpose. They are not, as far as design and usage are concerned, humidity controls.

Q. Whether it is your purpose or not, it is the natural result that flows therefrom.

A. It is an engineering fact.

Q. Let us go over to the next page, you want to talk about that. Will you read this sentence "If you are unable to bring the humidity up to the correct wet bulb temperature", explain what that means?

A. There is this paragraph "Humidity can be increased in the cabinet, not only by opening the moisture pan cover but also by partly closing the ventilation slide".

Q. Yes.

A. But note "by partially closing", the caution is throughout the catalog or instruction book.

Q. You could not close it entirely because you would smother your chicks.

[fol. 491] A. Not essentially, it is a safety factor incorporated so that if you are unable to bring the humidity up to the correct wet bulb temperature, by opening the moisture pan cover, you may partially close the slide, but do not close them entirely, even though you have but a few trays in the cabinet, in other words, the caution exists the second time, and that would be under emergency circumstances.

The purpose of having the interior of the cabinet humid, and keeping it moist and humid is to prevent too rapid an evaporation of the water content of the egg. That is so in any incubator. The more humid the interior of the cabinet is, the less rapid will be the evaporation of the moisture in the egg or the water in the egg.

That is why we keep an incubator humid, keep the interior atmosphere of the incubator moist. The purpose of the illustration on Page 117 of the James catalog, book No. 79, showing a faucet dripping water into a pail from an egg, is to indicate that the rate of evaporation of moisture content of an egg within a James Way incubator is controllable. That is controllable by the humidity within the chamber as one of the factors, which in turn is controllable by slides on the moisture pans.

Q. Also which in turn is controlled by the extent to which the slides are open?

A. That could not occur if the incubator is full of eggs.

That moisture content is also affected by the amount of air passing through the machine. It would be so even if the cabinet is full of eggs.

Q. Yes, and if it would be affected if it is full of eggs——

A. They would be fully open, if it is full of eggs.

They control the amount of air passing through the ma-

[fol. 492] chine, and have an effect on the moisture.

They do not control the amount of moisture lost by air going out of the machine, not entirely so, only slightly.

Q. They do control it, do they not? I am talking about moisture lost by the passage of air through the machine. You stated a while ago if we opened it up and blew all the air out we would lose our moisture and by restricting it, by having small openings, you conserve the moisture, do you not, in the James Way?

A. It would be conserved if the machine is full of eggs.

Q. It would be, I mean whether the machine was full of eggs or whether it was not full of eggs, the moisture would be conserved just the same by the restriction of air passing through the machine, is that not so?

A. The effect would exist.

Q. How many openings would you say were opened on the machine in the normal operation, when it was full of eggs?

A. From two to four, that I can——

Q. From two to four. You have a control of the amount of air which is passing through the machine by having four outlets, one, two, three or four, all of which can be opened at the discretion of the operator, is that so?

A. There are four openings at this point, yes, sir.

The outlets can be opened, one opened, two opened or three or four, in the discretion of the operator. This passage from our instruction book: "When the cabinet is full of eggs, both the extreme right and left openings should be uncovered", means two openings, and we have two more to go on if we have to.

[fol. 493] If the air outside is very wet, moist and humid, you can open up all four, but that would depend to quite some extent on the room temperature, because the greater the amount of opening with a high room temperature in relation to a smaller opening, the greater amount of moisture would follow through.

In our instruction book it is stated that normally when a cabinet is full of eggs you have only two openings. There are instructions in supplements which do not seem to be there, whereby also the entire four openings are directed to be open at certain times.

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BENJAMIN F. ZAPPKE, a witness on behalf of the defendants, testified as follows:

Direct examination.

By Mr. Toulmin, Jr.:

My residence is Fort Atkinson, Wisconsin. I have charge of sales and service of the Poultry Division of the Fort Atkinson Branch of the James Manufacturing Company.

That includes the incubator-hatcher, the subject of the present controversy. I have had experience out in the field with the operation of the incubator-hatcher of the James Company which we are now discussing. I have had experience with the turbulator or air mixer in the bottom of the incubator portion of the machine.

As to the operation of that apparatus, the first year we [fol. 494] had a steel coil spring for a belt and we had a certain amount of complaint on the breakage of that belt, which was changed the next year. I know of some cases where the belt would break in one cabinet and not in the other, and the operator would not notice it was broken for probably a period of two or three days, and the results from part of the trays would be left in that cabinet where the belt was broken and those that were not broken, and in two particular cases, it so happened that eggs came from the same flock and were put in different cabinets so we had a pretty close check on actual hatching results in that manner.

In one case it ran over all the eggs set, it ran something like five per cent and in the other case something like seven per cent difference.

Under present commercial operation of hatcheries, present competitive conditions, the effect on a hatchery profit of a difference of five to seven per cent in the number of chicks hatched, would represent the differences very often, especially in recent years when chicks are selling on such a narrow margin, between profit and loss for a hatching season.

Mr. Toulmin, Jr.: That is all.

Cross-examination.

By Mr. Ely:

We noticed a falling off in the hatching, when this belt to the turbulator broke in one case, in the third and fourth trays from the bottom, and in the other case it was the bottom two.

Mr. Ely: That is all.

[fol. 495] JOHN GEORGE SHODRON, a witness on behalf of the defendants, testified as follows:

Direct examination.

By Mr. Toulmin, Jr.:

I am consulting engineer and researchist for The James Manufacturing Company, Fort Atkinson, Wisconsin. I have been connected with that company between twenty and twenty-one years. I have done work for the James Company in connection with the incubator-hatcher now the subject of the present controversy.

I have had occasion to observe the operation of the incubator portion of the incubator-hatcher. My observation, with particular reference to the so-called turbulator or air mixer at the bottom of the egg cabinet and the operation of such instrumentality, has been that the turbulator or air mixer takes the down coming air and the cold intake air and thoroughly mixes them and breaks it up into a homogeneous mass.

The reason for so doing is to get a homogeneous mixture of a uniform temperature and to break up any existing currents.

I was present at a demonstration in the store room near by here, in the introduction of smoke into the bottom of the egg chamber of the incubator of James. The small smoke apparatus was set into action and its outlet nozzle was placed directly under one of the four intake openings at the bottom of the egg chamber, the right-hand egg chamber, and the smoke was left free to enter the chamber. It rose, and fountain-like, spread out and mushroomed over the floor of the egg chamber, on the inside of the egg chamber. [fol. 496] The air mixture motor was then started and immediately upon the action of the air mixer, the entire mass of the smoke was thoroughly mixed so that it was a blended mixture entering the lower section of the chamber.

I have had occasion to make actual tests with the James incubator and later to hatch the eggs in the hatcher, taken from the incubator, under conditions, where first the turbulator was run and under other conditions where the turbulator or air mixer in the bottom was not run. I did not do the work actually myself but it was under my inspection. I controlled the work. I did not do the manual labor. I

am in a position, by reason of my supervision of this test, to certify to the Court that my next statements as to the result of the tests are correct.

I do not recall just which of these tests were conducted first. I think without the air mixer in operation, but the incubator was run with the turbulator in operation and the results were noted and in record form, also in picture form. Again the same test was conducted without the turbulator running and making a comparative study of the actual figures and pictures.

Starting with the top sheet and going down, the first is a report of a hatch of September 16, 1933, a tray 6-C, which was the identification mark on the front of the tray. It was set on August 25th at 10:30 A. M. The chicks were taken off September 16th at 10:40 A. M. The position in the cabinet was the fourth tray from the top. The turbulator was running. The number of eggs set was 196. The number of infertile eggs was 26. The dead germs and chicks that [fol. 497] failed to get out was 24 and the chicks hatched was 146, out of a total of 196 eggs set, a percentage of hatch of fertile eggs was 85.88 per cent.

The next was a report of a hatch on September 16, 1930, tray D-6, also identified on the front of the tray No. B 62, B 63, set August 25th at 10:30 A. M. and chicks taken off at September 16th at 10:00 A. M.; position in the cabinet fourth tray from the top, turbulator out. It was not running; was removed from the chamber. The number of eggs in tray, 196; number of infertile eggs, 33; number of dead germs and chicks that failed to get out, 28; number of chicks hatched, 135 out of 196 eggs set, percentage of hatch of fertile eggs was 82.82 per cent.

The next is a report of a hatch of September 16, 1930, tray No. E 2, identified by a photograph showing tray No. E 2-2, E 2-3, set August 25th at 10:30 A. M., and chicks taken off September 16th at 11:00 A. M.; position in cabinet eighth tray from the top, turbulator running; number of eggs in tray 196; number of infertile eggs 44; number of dead germs and chicks that failed to get out 18; number of chicks hatched 134 out of 196 eggs set, percentage hatched of fertile eggs 88.15.

The next is a report of a hatch of September 16, 1930, tray No. D 6, identified by a photograph showing tray No. D 6, D 6-2, D 6-3, set August 25th at 10:30 A. M.; chicks

taken off September 16th at 10:20 A. M.; position in cabinet, eighth tray from top; turbulator out; number of eggs in tray 196; number of infertile eggs 27; number of dead germs and chicks that failed to get out 29; number of chicks [fol. 498] hatched 140 out of 196 eggs set, percentage hatch of fertile eggs 82.84 per cent.

In photographs attached to my report, at the bottom of each tray are certain letters and numerals. Those are the letters and numerals to which I refer in these reports. On the back of each photograph there is a repetition of this same data.

As to the effect of the turbulator or air mixer, when it is running and not running in the bottom of the incubator cabinet, so far as ultimate result of the hatch is concerned from the hatcher, this series of tests shows that the efficiency is increased in incubation and that the increase of this efficiency is sufficient to make either failure or success of the machine.

Counsel for defendants then offered in evidence the Shodron report with attached photographs and the same was admitted as Defendants' Exhibit No. 73.

With reference to why the Goldstein machine made in accordance with the Goldstein Patent, which is over in the demonstration room has two openings with slides on the door of the machine, in the rear door of the Goldstein machine, they were placed there for the purpose of checking the temperature, both dry and wet bulb temperatures.

These openings were not used during the hatching procedure outside of making test readings from time to time by the operator and myself. We would just open the slide, stick the thermometer in, take the reading for perhaps a minute or a minute and a half and take the thermometer out and replace the slide.

[fol. 499] Cross-examination.

By Mr. Ely:

Q. Do you have any other opportunity of ventilating the Goldstein machine except these openings, Mr. Shodron?

A. I did not.

Q. Mr. Shodron, how many trays of eggs were there in this incubator, how many trays, was this your ten-tray machine or twelve-tray machine?

A. The regular ten-tray machine.

Q. Now, I notice that the variation in hatching here goes from 85 to 82 per cent. and 88 to 82 per cent. And 82 per cent. hatch is a pretty good hatch in anybody's incubator, is it not?

A. I would say so.

Q. And you might have just as much variation in percentage of hatch in different flocks and different eggs, might you not, as you have got here, possibly get as great a variation as that in the normal operation of the machine?

A. If it were observed flock against flock.

Q. Your answer is, "Yes", then?

A. Yes, if you were——

Q. It is possible to get a variation?

A. It is possible, if you are observing flock against flock. It is possible to get as great a variation in the operation of any normal incubator as found here in our various tests, if you were making no preparation to get uniform distribution of eggs. Such a variation is possible in 196 egg operations between various hatches if you are not taking any precautions against that particular point. That is correct, subject to the variations in the quality of the eggs. You are subject to that variation if you do not make provision to avoid that variation.

Q. That is, you cannot go into each egg before you set it [fol. 500] and tell whether it is going to be a good hatch or not?

A. No, but I can tell my eggs, if I have 196 to set in one tray and I take a tray, say of 400 eggs, and take one egg and place it in that tray and an egg and place it in another tray and so on, and in that way get a thorough mix of the samples taken.

We do not make any more tests than these four tests recorded here. These are all the tests we made. It was satisfactory and convincing of the other observations we made with empty machines. When we made these tests in the machine, to the best of my recollection, the machine was filled with eggs.

Proceedings adjourned to Thursday, February 8th, 1934, at 10:00 A. M.

Proceedings Thursday, February 8th, 1934, 10 A. M.

WILLIAM N. WILLETT, a witness on behalf of the Defendants, testified as follows:

Direct examination.

By Mr. Toulmin, Jr.:

I am Assistant Engineer at the James Manufacturing Company. I have been there about three years and eight months.

I have had occasion to test the fans of the Smith Incubator Company, put in their so-called Smith machine. I am familiar with what has been called the new style fan [fol 501] and the old style fan. We ran standard calibration tests on those fans as recognized by the American Society of Heating and Ventilating Engineers, to determine the capacity of the fans. I made a record of the size and dimensions of the fan blades and a record of the tests made.

Referring to two papers, the top diagram is the diagram of the so-called new style fan; the second chart is a chart of the capacity, air capacity, the volume delivered by a fan consisting of four of these blades running at 1,630 revolutions per minute. That is the standard speed for that fan as I understand it. The free air delivery according to this test would be 2,020 cubic feet per minute.

With reference to the documents now handed me, the top document is the diagram of the so-called old style fan blade and the second graph is the result of the capacity test run on such a fan running at 1,630 revolutions per minute, which I understand is the correct speed of the motor. The air delivery, the free delivery is approximately 1,085 cubic feet per minute, which is approximately one-half of the new fan.

(Defendants' Counsel then offered the four blueprints in evidence as a single exhibit and they were admitted as Defendants' Exhibits Nos. 74-A, B, C and D, data on Smith fans.)

I recall that last week, at the end of the session, there was an arrangement made by which Dr. Greene and Mr. [fol. 502] Taggart would go together to Frenchtown, New Jersey, to the Kerr Hatcheries, to take the speed of the air in a completely filled Smith incubator. I arrived in

Frenchtown, New Jersey, on Saturday last at about 1:20 P. M. I went to the Kerr Chickeries, as the firm is styled, and talked to the young Mr. Kerr. I told him that Mr. Taggart and Dr. Greene had agreed to meet at the Kerr Chickeries and test the speed of the air in the machines at at place. I asked Mr. Kerr if he had heard from Mr. Taggart, and he replied that he had heard from Mr. Taggart. Then, I asked Mr. Kerr if he would give me the data on the number of eggs which were in his machines and he told me that of his some twenty machines, machines Nos. 1, 2 and 3 were full of eggs and they were hatching, that is completing getting the chicks out of those three machines. Machines Nos. 4, 5, 6 and 7 were partially filled with eggs. Mr. Kerr asked me what he could do for us and I told him that we had no requests to make; I was just there to see that we would get fair play, and he assured me that we would get that and then I went to the hotel in Frenchtown and had dinner.

While I was at dinner, I ascertained that Mr. Taggart had had dinner at the same place, and I asked if Mr. Taggart was staying at the hotel and they replied that he was not. Then, I went back to the Kerr Chickeries. When I got there I asked one of the workers if I might see Mr. Taggart and he said, "Mr. Taggart is in Machine No. 3", and indicated that I might walk back and see him. I walked back and when I got there, I saw on the floor in front of [fol. 503] the machine a suit case containing at least four anemometers and other instruments for measuring various things in the incubator; speed, for instance. I also saw a brief case in front of the machine, as well as a hat and a couple of coats. On the other side was a pile of egg cases; in front of Machine No. 3, I saw three complete or four complete fan assemblies, including the motor and blades, assemblies including motors and blades and frames with which they are put into the machine of the style which is the so-called new type of fan. Then, I waited until Mr. Taggart came out of the machine and I greeted him and said, "Mr. Taggart, how are you getting along?" Or words to that effect and he replied he was getting along nicely, that he had the curtain with the celluloid window installed and ready to use. Then, I asked him if he had changed the fans in the machine and he replied that he had taken out the new style fans, which were lying in front of

the machine and installed the told type fan, which he had taken out of another incubator which was not then in use. According to Mr. Taggart, the new style fans had been taken out of Machine No. 3, and he was installing the old type fans in No. 3.

I talked to the operator of the machines, and after Mr. Taggart had indicated that he was leaving for New York immediately, and the operator told me that he thought that it would be all right, that it might be all right to leave those old style fans in the machine until Tuesday, but that they did not furnish enough air. After I left the premises on Saturday last, I returned on Tuesday morning, reaching Frenchtown about ten minutes after nine in the morning [fol. 504] and some time later Mr. Shodrun and Dr. Greene came in, as I understand it from Frenchtown. Mr. Taggart was there at the time I arrived and when Dr. Greene and Mr. Shodron arrived, we asked Mr. Taggart whether or not he had changed the fans and he replied in front of the three of us that he had changed the fans as I have just described. We did not proceed with the tests at that time in view of these changes.

Mr. Toulmin, Jr.: You may have the witness.

Cross-examination.

By Mr. Ely:

Q. With regard to these matters at Frenchtown, New Jersey, was it explained to you by Mr. Taggart that, at the time Dr. Greene was at Frenchtown making his observations of the machines, that those machines had, at that time, what you call the old style fan in them?

A. No.

Q. That was not explained to you?

A. That was not explained to me.

Q. You are positive Mr. Taggart did not tell you that? You want to say that Mr. Taggart did not tell you that?

A. I cannot recall that Mr. Taggart said that the old style fans were in at the time that Dr. Greene made his test.

Q. Did not Mr. Taggart tell you that this so-called new style fan had just been installed in those incubators this year?

A. He made some statement to that effect.

Q. And then, if those new style fans were installed this year, they had the old style fans last year?

A. I can't recall the latter part. That might follow, but I can't recall that we discussed that.

[fol. 505] I do not recall that it was told to me that the only machines they had at the Frenchtown plant which had the old style fans in them were machines that were not full of eggs. I do not recall that statement being made to me at all. As to Mr. Taggart telling me that the reason why he put the old style fans in the machine which they proposed to test was to duplicate the conditions as they were when Dr. Greene was there in the fall, I can't remember any discussion to that effect. I do not remember that at all.

We refused to go ahead with these tests with that machine with the old style fans in it. We refused to participate in any test. We took that position on the advice of our attorneys. I did not call Mr. Toulmin on the 'phone. I wrote him a letter. I consulted with Mr. Toulmin on the matter. Whether I told Mr. Toulmin that these old style fans that Mr. Taggart was putting in were the fans which had been used at the time Dr. Greene was there in the fall, I couldn't tell him that because I didn't know what fans were in the machine at the time Dr. Greene was there.

I knew that there were new style and old style fans in the machines at that place.

Q. Yes; and you knew that the machines which were full of eggs had the new style fans in them. You knew that, did you not?

A. I knew that No. 3 at least—I didn't go into any of the other machines except No. 3, and I knew from Mr. Taggart's explanation that he had taken out the new fans from No. 3 and put the old fans in. As I remember it, Mr. Taggart told me he got the old fans from machine No. 14. Mr. Taggart offered to make tests in our presence in the other [fol. 506] machines in which the new style fans were running, machines which were full of eggs. We refused to do that, to participate in those tests, because we did not know whether he had made any other changes. I did not ask him whether he had made any other changes. I did not take that matter up with our attorneys as to whether we

should participate in tests on the machines with the new-style fans. The leadership of the three was in hands of Dr. Greene, and I believe that Dr. Greene would be able to testify on that matter. I recall that Dr. Greene telephoned our attorneys, and I was not present and I do not know what was said or done at that point.

These charts that I furnished, that is, these blue prints which have just been offered in evidence, they are not results of any tests of actual air speeds in machines in operation. They are comparative tests of fan capacities on the two types of fans, the old and the new style type. I do not know when the new type fan was put in by the Smith Company. The old style is the type of fan which is over at the demonstration place.

Q. And Mr. Taggart then offered to put in the very same fans that you have over here at your demonstration place, in the incubator full of eggs, and yet you would not participate in any tests under those conditions, is that right?

A. Mr. Taggart refused to commit himself on the pitch of the old style fans. He says he does not know what the pitch of those fans are, and in the light of that, we refused to go ahead.

Q. You refused to go ahead and make any tests whatever on the advice of Counsel?

A. On the advice of Counsel.

[fol. 507] By the Court:

Q. Who owns these machines down there?

A. They belong to—I say "belong"; the Kerr Chickeries, Inc., has 20 machines. Now, I don't know how the financial arrangements are handled between Smith Incubator Company and Kerr Chickeries.

Q. Who has control of the machines down there?

A. The control of the machine is with the Kerr Hatcheries, Inc.

Q. Is that a separate institution from the plaintiff?

A. It is an independent hatchery.

Q. Who has the say as to who shall go into these machines and what shall be done with them?

A. The Kerr Chickeries.

Q. I mean, did you, or Taggart, or anybody, do anything you wanted to with these machines without some——

A. I suppose—I can only suppose that any changes which are made on those machines would have to be made with the consent of the owner, the Kerr Chickeries.

Mr. Ely: That is exactly what happened, your Honor. Mr. Taggart got permission to put the same fans in that were in at the time when Dr. Greene was there, and he also offered to go ahead and make the tests on both machines.

Q. You said machines one and two had the new fans in?

A. I understand that but I can't make any definite statement because I have not seen them, and I didn't ask any definite questions on that point. However, I understand that the new fans are in Machines 1 and 2 which are filled with eggs.

Q. How could you test them both? Did you have any [fol. 508] way of testing both?

A. Our Counsel—I was merely down there under orders. I couldn't make any decisions of my own; and after conferring with our Counsel and giving them the facts of the case, we were advised not to go ahead with any test, in view of the fact that we did not know whether changes had been made on the other machines or not. We have no way of knowing——

Q. Would not the corporation know what changes were made on their machines?

A. They should know, if the participants—if the workers made only the changes which they were asked to—or had asked permission to make.

By Mr. Ely:

Q. Did you make any inquiry as to whether any other changes had been made except putting in old style fans? Did you ask whether any other changes had been made?

A. Yes, I asked.

Q. What did they tell you?

A. The operator didn't know of any other changes which had been made.

Q. So the only change that had been made, then, was to take that No. 3 machine and put in the old style fans that were in the machine at the time Dr. Greene was there last fall? That is true, is it not, so far as you know?

A. I can't say which fans were in there when Dr. Greene was there last fall, because I do not know.

Q. Well, assuming that that was the fact that, as we will show, when Dr. Greene was there in the fall, the old style fans were in the machine, then the only change which had been made, so far as you know, assuming that to be the fact, was to put those machines in exactly the condition they [fol. 509] were in at the time Dr. Greene was there last fall.

A. I can only testify as to the fact which I know.

Q. I ask you to assume——

The Court: I think his answer already appears, to that question.

Mr. Ely: All right, your Honor; then I will not go ahead with that any longer.

The Witness: I am familiar with the means in the James Way machine that propels the air through the machine. As to having spotted results in the incubation in the James Way machine, I was not present at any of the hatching tests which Mr. Shodron testified to yesterday. I do not know what the results of that are, except from hearsay. I am not familiar with the machine out on the market. I am not a field man. I do not know whether they get any spotted results from that machine. I do not know whether different results are gotten in eggs at different points in the incubator, or whether it is uniformly good hatching throughout the incubator. I am not familiar with the field results at all. I couldn't tell you who would know about that. My function in the organization is a researchist and engineer, and I am not familiar enough with the set-up of the organization. I don't think I have ever seen that machine actually operated as a commercial hatcherman operates it.

If there were spotted results, or non-uniform hatching throughout the James Way machines as they went out on the market, that fact would not necessarily come to me as a research man to determine the reason for such results. Our company manufactures other things than incubators. [fol. 510] We manufacture brooder stoves; at the present time we are building steel barns and steel silos, and that sort of thing, and my function is not only to watch the incubator. I cannot spend all of my time with the incubator, and I am not familiar with those results.

Q. You have never heard of such a thing as a non-uniformity of hatching throughout the James Way incubator, have you?

A. I am not familiar with that.

I don't remember ever having heard of a decided spotted condition that is different results throughout the machine in the James Way. It is possible I would hear of such a thing in my connection with the company, if such a thing had occurred. I wouldn't say probable.

Mr. Taggart, in my presence and in the presence of the other representatives of James Manufacturing Company, offered to make tests in any machine whatever that was in operation at the Frenchtown Plant. We did not go ahead and co-operate with him on that.

Mr. Ely: That is all.

Redirect examination.

By Mr. Toulmin, Jr.:

As to the influence the pitch of the fan blade has on the quantity of air that is delivered, if we consider that the fan is turning at the same speed, if we have a flat, an absolutely horizontal fan blade, we get absolutely no delivery. If we pitch it a little bit, we get more delivery, and if we pitch it more, we get more delivery, and as we go on up. It is essential to know the correct pitch of the fan blade in order [fol. 511] to determine that fans are comparable. In other words, we would want to know whether the fan which we are going to test had the actual pitch that the manufacturer intended for it to have.

Mr. Toulmin, Jr.: That is all.

Mr. Ely: Nothing further.

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John George Shodron, recalled as a witness on behalf of Defendants, testified as follows:

Direct examination.

By Mr. Toulmin, Jr.:

I attended the proposed tests at Frenchtown, New Jersey, at the Kerr Hatcheries, such as have been just de-

scribed by Mr. Willett. I attended with Dr. Greene and Mr. Willett. Dr. Greene met me around 8:25 at Princeton Junction, and we drove over from Princeton Junction to Frenchtown and arrived there somewhere in the neighborhood of 9:45, to the best of my recollection. Dr. Greene led the way into the building and I accompanied him. We saw Mr. Willett standing there, and Mr. Taggart, and walked right over to him, in front of the machine numbered 3. I said nothing while I was in the building. Dr. Greene asked Mr. Taggart if he had changed those fans. Mr. Taggart said "yes".

I made an investigation into incubator No. 14 from which these new fans that were put into No. 3 were supposed to have been taken. I walked throughout the entire [fol. 512] hatchery, examined each machine from the name plates on the door, and arrived at No. 14, the door of which was open. I stood in front of the door, looked into the machine, saw that the fans had been removed. No. 14 had been hatched in; it was not a thoroughly clean machine. I asked Dr. Green to ask Mr. Taggart to take us into machine numbered 3, and he did so. Mr. Taggart took us in, and while walking in, I reached up above my head in order to observe what the air delivery of the fan was. I then asked Dr. Greene to ask Mr. Taggart to lower down one of the fans, as I would like to see the fan; so Mr. Taggart lowered the third fan from the top. This was a fan that was supposed to have been taken from the dirty machine, No. 14. I would say the fan that I found in No. 3 was clean. Four fans were taken from No. 14. It is my understanding that four fans were taken out of No. 14 and moved over into No. 3. I only inspected one because I did not want to shut down the complete incubator.

Incubator No. 3 had eggs in it in process of incubation. I could see through the transparent window, or cellophane window that Mr. Taggart said he put in there. When we got one of the fans in No. 3, which was supposed to come from the dirty machine 14, opened up, that is stopped and let down, I would say it was clean. When you clean a fan, those thin metal blades, as to the pitch, may be distorted. As a matter of fact, they frequently are, if you are not careful.

Mr. Toulmin, Jr.: That is all, of the witness; you may have him.

[fol. 513] Cross-examination.

By Mr. Ely:

That No. 14 machine did not have any eggs in it, as far as I could see; the machine was not lit up brightly; there were no lights. It was not working. Machine No. 3 was working, but I couldn't say whether it was full of eggs or not. I observed eggs through the cellophane window in the curtain The machine was operating. I don't know what fans were taken out of that No. 3 machine. I saw some fans on the floor in front of the machine. I heard in the conversation that those were fans that came out of that machine. They had been used for some time. I could not tell how long they had been used.

Spotted results are not gotten in the James Way incubator, not to my knowledge, if the machine is operated with the air mixer.

Q. And you will get the same results wherever the eggs may be placed, as far as anybody is able to determine? You do not have localities in there where you get results and some where you get good results?

A. I don't know.

I don't know of any spotted results in the James Way machine, if the machine is in operation as it is built to operate. In the James Way machine, the eggs are supposed to stay in one spot the whole time they are in the incubator. The result, to the best of my knowledge, is the same whether the eggs are put in one corner or down in another, or wherever they are located in the trays. I have never been able to observe any difference in the results, due to the location of eggs at various spots.

[fol. 514] By the Court:

Q. Just a moment. You said you examined these blades. You said they were liable to be distorted by reason of being cleaned. Do you say these blades were distorted?

A. I can't say whether they were distorted or not, because I didn't touch the blade nor did I measure the blade.

Q. Knowing that that might result in a change after being cleaned, would you be able to tell by looking at them whether they had been distorted?

A. Not by looking at them, but if I could take the blade off the motor and lay it on a flat surface and measure the pitch——

Q. You think it would not be observable by the eye?

A. Not in a general way.

By Mr. Ely:

Q. Now, those fans, in the operation of the Smith incubators, get fouled with various things, do they not? They get dirty?

A. They get dirty.

Q. And in normal operation of an incubator of that kind you clean those fans periodically, do you not? That is a normal operation?

A. I don't know whether that is a normal operation of the Smith machine or not.

If they clean the machine, I would assume that they would also clean the fan blades. That would be part of the normal upkeep of the machine.

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[fol. 515] ARTHUR M. GREENE, continued as a witness on behalf of the Defendants, and testified as follows:

Direct examination resumed.

By Mr. Toulmin, Jr.:

Q. Dr. Greene, did you attend the proposed test of the incubators of Smith at Frenchtown, New Jersey?

A. I did.

Q. Will you please describe who went with you and what happened?

A. According to agreement when we left Buffalo, I was to meet Mr. Shodron on the 7:15 train from New York which reached Princeton Junction about 8:25. I also went east with Mr. Willett. We thought it advisable to have Mr. Willett go to Frenchtown to see if any changes were going to be made. No. 1 machine was the machine which I tested, and although nothing was specified about the machine to be tested, I fully expected that No. 1 would be the machine. We reached New York about a little after seven——

Q. In the morning?

A. In the morning, on Saturday, and Mr. Willett went on to Trenton, and he hoped to get away from there in the morning, but he didn't get away, so, according to his letter to me, he reached there in the afternoon and found, according to his statement, that Mr. Taggart had changed the fans, and that there were a number of anemometers lying around.

He stated that he had sent an air-mail letter to the attorneys and to the representative of the company, the execu- [fol. 516] tive officer here, and then we waited until Monday, when I received directions that if the statement made by Mr. Willett was true, that not knowing what changes had been made, we should not make any tests.

After meeting Mr. Shodron on Tuesday, as per agreement, and driving over there, we agreed with Mr. Taggart to meet there at 10 o'clock. We were a little ahead of time, and after the usual greetings, I asked Mr. Willett and Mr. Shodron to come near me, as I was talking to Mr. Taggart, and I asked him if he had made changes, and he said he had; and my understanding from him was that he had taken the fans from the No. 14 machine, which I understand had nothing in it, and had moved that over to No. 3.

When I told him that we would not make the test, he suggested that we make a test in No. 1, and that would be with the new fans. Being an engineer, and liking to make tests, I said that I wished I could make it, and I would call the Counsel and find out if they would permit it. Again, we did not know what changes had been made in No. 1. Now, a curious thing has happened. As I reported to you, Sir, in the summer——

Q. Summer of 1933.

A. When I went to Frenchtown to make the test, in order to get definite data for the Smith machine, I was told by someone at the plant, your Honor—I do not know who—that the fans had been changed and fans of larger capacity had been installed.

Q. It was after that, that you made your test?

A. Yes, sir.

[fol. 517] The Witness: I asked the workman who was with Mr. Taggart if the fans had been changed, and he said they had not been changed.

The Court: You mean, No. 1?

The Witness: In No. 1, yes, sir. That is, the statement which I made was in error, I then asked Mr. Weisel, the manager, whom I had met on the previous test—or on the test—and also had given me permission to make this test, I also asked him, and he said they had not been changed.

The Court: You mean, from the time——

The Witness: From the first ones put in. The measurement which I made on the air discharge is surely larger than the smaller machine, according to my figure; but I understood that they had been changed, and therefore, to say that we know that the No. 14—the fans in No. 14 were the fans in No. 1 when I tested them, I couldn't say that at all, and we have no absolute evidence that that was so. However, as there had been changes made without any notice to us, we did not know what other changes had been made, if any; and acting on directions, which I think are proper, no tests were made.

Q. Have you before you, in your record note book, the record of the tests that you yourself made in the summer of 1933, to which you have just referred?

A. I have my notes of the test made at Frenchtown on the [fol. 518] so-called No. 1 incubator of the Kerr Hatcheries, Frenchtown, New Jersey, on August 26, 1933. At this time I measured the discharge as best I could with an anemometer, and I found the velocity of discharge of the 16-inch area to be 1,150 feet per minute, which gives 1,603 cubic feet per minute.

At this time the machine was in operation and substantially filled. I didn't look at all of the racks. Chicks were coming out of the shell, as I heard the little squeaking, and those racks which I did look at were filled to the top. They told me at that time that No. 1 machine had been in constant operation for about three years.

Q. And did you test the air speed between the trays behind the curtains—you have testified about that, I believe?

A. I had no cellophane window to look in. I wanted to know something about the speed of the air passing up between the trays, and so I set my anemometer to zero. Pulled the curtain back, hastily got in, placed the anemometer as near as I could in a horizontal position, started it when my watch had its second hand at zero, jumped from behind the curtain, and closed the curtain in; and then at the end of four minutes I got in again and stopped the

anemometer at the time and took the reading for five minutes—or four minutes, and the speed per minute which I found was 165 feet per minute.

By the Court:

Q. What tray?

A. Between the trays, your Honor, 165 feet per minute upward between the trays.

[fol. 519] Q. What height?

A. I beg your pardon, Sir.

Q. What height?

A. About half way up the trays. That is just at a convenient position for me to move the anemometer in.

By Mr. Toulmin, Jr.:

Q. How did you support the anemometer between the trays, Doctor?

A. The anemometer lay on the two opposite trays, that is, the bottom of one tray and across to the top of the other. It was slightly inclined, and it was a little bit larger than the space, so it rested over the edges.

Q. Now, Dr. Greene, will you proceed with the discussion of the prior art that we left off with when you were on the witness stand before?

A. Shall I follow the large chart?

Q. Have you your prior art volume?

The Court: We were down to——

The Witness: We were down to No. 18, your Honor, I believe, the Proctor and Knowles Patent 432,282. I think I had finished describing that when adjournment was taken.

Q. That is correct. Now, start at the next one.

A. No. 19 Exhibit on this sheet is a reissue patent to Proctor, 11,460, of 1894. It is entitled, "A drying machine," and represents a method of treating air as shown in Fig. 1, to properly treat material placed within the cabinet. There is a forced draft fan, indicated merely in a conventional way, which forces air over heating coils, and this air then [fol. 520] passes around the material to be treated.

An outlet at the top, marked "D", permits air to exhaust whenever fresh air can enter, and in this machine the fresh air is permitted to enter through the ends of the trays supporting the material to be treated.

This indicates an invention for the proper treatment of eggs by air currents produced by fans, which are controlled as to their properties for the proper handling of material.

The next prior art patent, No. 20, is that to Schwartz, 535,175, of March 5, 1895; and although this patent has a number of figures illustrating changes which may be made in the structure, following the teachings of the patent, Fig. 5 has been selected for this chart, and in Fig. 5 we find a cabinet of large size, so large that the material to be treated has to be run in on racks, running on small wheels on a track. These racks are placed into compartments on the side, and from the size, the space may be large enough for the entrance of men.

There is a forced draft propeller fan at the top, which in this case exhausts air from the central passageway and passes it down to the side passages, where it is properly cooled in order to remove the heat that has been given up by the treatment of the material, and then this air is properly humidified by a vessel at the bottom which contains water and heating coils to bring the water to temperature above that of the air, so that the vapor given off from this warm water will be sufficient to properly condition the air for the material to be treated.

[fol. 521] Fig. 5 shows this air current entering the chambers in which the material is held, and then passing out through openings in the side into the central passageway.

By the Court:

Q. What are those pipes $C^3$?

A. C proper is a little spigot——

Q. I understand that; C above that, $C^3$?

A. $C^3$ is a device for cooling the air. In the earlier figures, your Honor, he uses a coil of refrigeration. In this particular case, however, he throws a spray of water in here for the purpose of refrigerating or cooling off the air to proper temperatue.

Q. Cool it and then heat it?

A. Yes, and that warms the water—not so much the air as the water.

By Mr. Toulmin, Jr.:

Q. And the water in turn warms the air?

A. Yes, it does.

Q. In other words, you get a balanced temperature by opposing heat on one side and the cooling effect on the other, is that correct?

A. Yes. Very often, in the treatment of air for ventilation work, we have it cooled to such a temperature, cooled by spray, to such a temperature that its moisture content in the saturated condition gives the moisture which is needed in the room. Then we pass this air over a heating device and bring it up to temperature again for the proper [fol. 522] temperature condition. We will see that in one of the later patents.

The next one on the sheet is that to Schwartz, No. 535,175, the same one as we have here, but he is now referring to Fig. 1 of the patent, and your Honor will see, the coil of pipe marked $C^1$ in this picture which is the refrigerating coil, which in Fig. 5 has been replaced by a spray and in this particular Fig. 1 he has only one chamber for the treatment of his material.

No. 22 is the patent to Proctor 553,723 of 1896 and in this selection, No. 1 figure has been reproduced there and in this we have the propeller fan driving the air downward instead of upward as in the previous patent. Right above that fan, supplied by the pipe G is a centrifugal humidifier $D^2$ or $C^2$, which is merely a rotating disc, on which the water is discharged and then it is formed into a spray by the revolution of this device. This humidifier is placed directly over the fan C. The air then is discharged downward, distributing its excess moisture, if any, into the pan at the bottom $H^3$ and then if there is a deficiency of moisture, the piece of fabric $H^1$, which dips into this water is, by capillary action, kept in a wetter condition and will give up moisture to the air if the air is not of the proper humidity. The air then passes and comes to the bottom, mushrooms and goes up through each chamber, passing over the material to be treated by this conditioned air and then enters the middle compartment and in this device, of course, the spray at the top can be used to take out heat which may come from the fabric, to be treated.

[fol. 523] We now come to Figs. Nos. 23 and 24, which are taken from the Verna patent, 891,019.

Q. Dr. Greene in the interest of economy of time, I suggest that you skip over Verna and go to the next one which I think is Freas?

A. The next drawing, No. 25, is taken from Fig. 3 of the Freas patent 1,165,958 of 1915. This device, your Honor, is called a heating system for constant temperature baths, and it is used by biologists for the incubation of organisms; it is used by the chemist or physicist for holding a material at a fixed temperature. In looking at this figure on the large chart we find a propeller fan at the left, No. 27, which is driven by electric motor 23 on the outside of the cabinet.

Q. Dr. Greene, is not the fan 26 and the opening 27?

A. You are correct, the fan is 26 and the opening near the center of the fan for the return of air is marked 27, which is by mistake. The shaft No. 24 is placed within a tube, which has a damper 30, 31, over its end, and by moving this damper we can control the amount of fresh air admitted into this device. At the center of the chamber of this device is No. 19A near the top and also near the bottom. These are outlets which are capped over by a spring cap so that whenever an amount of fresh air is introduced through 30, 31, and pressure is thereby built up, these outlets are opened to the atmosphere to allow whatever is in there to go out; if this was a Smith machine, it would, of course, be foul air. The propeller fan drives the air in this case outward and down through the passage ending at 29, it is shown by a dotted [fol. 524] arrow. The air then passes over heat coils 32 and 33 and enters the cabinet in the front; it then distributes itself through this cabinet, returning to the fan, and after making its circuit. Now, the purpose of the machine with the baffle plates or shelves 13, 13, is to give, as treated, a constant temperature bath. There is a thermostat arrangement inside, which hangs down at 77, a large bi-metal thermostat, which controls the amount of heat in the heating coils and in this way the machine gets the necessary heat to maintain a fixed temperature. If the material itself gives out heat then, of course, the heating coils will be shut down. On the other hand, if the material within requires or takes up heat, then the heating coils will be started.

The walls of this machine are shown cross hatched, also the door, representing an insulated chamber in which a constant temperature is controlled and the thick walls prevent the waste of heat by transmission.

In this machine we have the admission of fresh air, the mixing of it with the return air, the discharge of excess air

and the maintenance of a proper temperature which is constant.

Q. Now, will you proceed to Nos. 26 and 27, which are the same, and 28, are the same machines, as I understand it?

A. These devices, shown in Nos. 26, 27 and 28, are the figures from the Schmidt and Schutterle patent 1,010,809, and as seen from Fig. 1, the device is a cabinet of large size so that a man can go in through the doors, and as shown in the next figure of the chart, which is Fig. 2 of the patent, a cross [fol. 525] section, a cross vertical section, will show that within this device there is a propeller bladed fan B, which drives the air through the shelves or racks, because these shelves are mounted on wheels R and the air then returns above at the ceiling 10 to be re-circulated after passing over the heating coils E and being humidified by the spray head 15. It will also be noted both in Fig. 1 and also in this Fig. 2 that there are trap doors 9 through which foul air can be discharged. Then the fresh air is brought in through No. 7, as the patent states on page one, line 84 and line 85, the bottom rear door 7 may be raised more or less and sustained in the raised position by the chain 8 or its equivalent and in that case the exit or exhaust would be by way of door or doors 9: At the top of the apparatus the circulation of air being through the exhaust fans or blower and through the dryer compartment beneath the false top 10. Starting, however, at line 81, it speaks of this admission of air. Fig. 5 merely shows the same view, showing the grillage through which the air has to pass after leaving the fan, to be broken up and made parallel. It shows the spray nozzle 15 and it shows the coil controlled by the stop valve 3.

Q. Now, will you for the purpose of economy of time, go over to the Goldstein, No. 32?

A. It is Goldstein 1,137,752. This Goldstein——

Q. Just a moment, Doctor?

The Court: It is the one we had before.

The Witness: No. 32 of the Goldstein patent is followed by—first of all, Fig. 1 of that patent and the chart also [fol. 526] shows Fig.——

The Court: Is that the one of which you had the model?

Mr. Toulmin, Jr.: Yes, we have had that.

The Court: We have gone all over that.

Mr. Toulmin, Jr.: That is the one Professor Halpin testified about yesterday. May I ask a couple of questions to shorten this.

Q. In this Goldstein patent, Dr. Greene, do you find a provision for the circulation of air in a circuit, the application of heat, the control of heat, the application of moisture and the control of moisture?

A. I do.

Q. What provision do you find for the control of ventilation in the Goldstein apparatus, for fresh air and foul air?

A. I find no specific arrangement in the patent for the circulation of the air builds up a pressure and it is my opinion that from the high pressure parts of this machine there would be a leakage outward and from the low parts of the machine there would be a leakage inward.

Q. When you open door 8 from time to time, you would supply fresh air and let the foul air out, is that it?

A. Yes, the part numbered 9 at the bottom, in my opinion, is the place of sub-atmospheric pressure and part 9 at the top is a point of super-atmospheric pressure. The fan 12 is that which produces this circulation; as in the incubator [fol. 527] built on these particular disclosures, the temperature is controlled by 11, which is a coil heated by the boiler 14, by the valve 25 admitting steam or hot water into this system which is controlled by the thermostat 20. 21 is a hygrostat which controls the admission of energy into the water bath 13, which boils some of the water off and humidifies the circulating system of air, which goes into the cabinet at the top, and passes through and out at the bottom and makes a circuit again.

Q. With respect to the Proctor, Schwartz and Goldstein machines, of which we have samples built up over in the demonstration room, my understanding is you testify those samples were correct representations of those patents, is that correct?

A. I have checked the machines which were exhibited there and are exhibits in this case against the patent drawings and I believe they are correct representations of the teachings of the patent.

Q. Will you go over to No. 37, the Peters' patent?

A. This patent, your Honor, No. 37.

Q. 843,909?

A. Of 1907 is a device for——

Mr. Toulmin, Jr.: Just a minute, Doctor, until his Honor finds it.

The Court: I have it.

The Witness: The figure in No. 37 is taken from the only figure of the patent. This is for the proper conditioning of the air introduced into some chamber. Air is introduced through the outlet marked 23-A; three being shown in the patent drawing. The air from this room is then returned [fol. 528] through the duct 11, underneath the floor, entering that duct from registers 49 and 50 in the side walls of the room. This duct may be under low pressure produced by the suction of fan 16 or if there is sufficient heat pressure introduced into the room, it may be above atmospheric normal. It would be sub-atmospheric in No. 11. Then, at the extreme right of this duct 11 are a pair of dampers No. 12, controlling the amount of suction from the fan on the air from the room. There is a damper 13 to which fresh air can enter the system, if the operator desires a greater amount of fresh air, because of high CO2 content, the carbon dioxide content. Damper 12 is almost entirely closed and damper 13 is open to allow pressure to build up in lane 11, duct 11, so then the air will, by its own pressure, open the damper 34 in the vertical 54 in the vent pipe 52, leading to the roof. However, if only a small amount of air is introduced from the outside through the damper 13, then, the sub-atmospheric pressure within the room causes the damper 54 to close and fresh air does not enter through 52. Now, after the air reaches the fan 16, whether it be re-circulated air, entirely fresh air or a mixture of fresh air with re-circulated air, this air can be sent over the coils 15, which are for the purpose of chilling that air, to reduce its moisture content. The water taken out of the air drops to the bottom and [fol. 529] escapes through the trap marked 35. If the air does not require drying, then, the damper 28 is closed and all of the air delivered through the fan passes through the duct 26, and does not go through the refrigeration section 15. We now come to another figure in which there are steam coils, 20. Thereby by-passing some of the air from the pipe 37 and sending it over these coils, we can warm that air to the proper temperature for entrance into the room. Then, finally we have a pipe 48 in the duct 22, which is a steam pipe to put in extra moisture if that is needed. The de-

vices marked 35, 36 and 37, out in the room are therinostats and hygrostats to properly control the humidity and temperature, or better the temperature and the humidity of the air in this room. In this device, as Peters and Hungerford describe, we can control the conditioning of the air for its purposes within this chamber. Such devices, your Honor, are arranged in Courtrooms, theaters, chocolate manufacturies, for the manufacture of chemicals, whereof necessity temperature and humidity of the air movement would be required.

Q. Now, Dr. Greene, right there, is that apparatus of Peters adapted for the conditioning of air for temperature, moisture and ventilation for places where people gather, human beings gat-er?

A. It is used for that, but it is used also for other places, [fol. 530] but it is used for places where human beings gather.

Q. It is a fact, is it not, that where human beings gather they give off moisture, they give off carbon dioxide, they give off heat and must take up heat and must have some moisture supply and must have fresh air to be comfortable, is that right?

A. That is correct, and device 18 is to remove any excess heat, it is a cooling coil. Device 20 is to add heat when necessary.

Q. That is another instance of balancing heat against cold, effected as in the case of the Smith incubator, where we find a heating coil and a cooling coil?

A. That is correct.

Mr. Toulmin, Jr.: That is all with the witness, you may have him.

Cross-examination.

By Mr. Ely:

Q. First, with respect to this flurry down at Frenchtown, Dr. Greene, when you were there, Mr. Taggart offered to take you into No. 1 machine and make tests there?

A. He wanted to do it.

Q. And you wanted to do it?

A. I expressed the opinion that I would like to do it, having been there with all our equipment, and being an engineer.

Q. But, instead of doing that, you picked up your dolls and went home?

A. We believed that to be the proper thing to do because we knew nothing about what was done; some changes were made without our knowledge, without our consent.

[fol. 531] Q. You were suspicious the whole business was changed?

Mr. Toulmin, Jr.: Let him finish his answer.

Q. Go ahead.

A. We were to go there and test the machine and when I got this message from Mr. Willett, I was surprised, and shocked, that without any consent these changes should have been made because if there had been changes, Mr. Ely, the ratios would have been all that we wanted. That is, if this machine handled twice as much air as the standard machine, which Mr. Taggart has told us in Court, and we got a velocity of a certain amount, we could divide that by two. Moreover, Mr. Taggart stated in our presence that these new fans did not discharge substantially more air than the old and it was primarily for the purpose of taking care of the over-heating of the motor. That being the case, it seemed very strange to me that the old fan should have been put back. Moreover, I did not know which fans were in there when I made a test.

Q. Well, I think he did because I think the Smith Incubator Company know what machines are at what places, but as a matter of fact you did not make any actual tests then?

A. No, that is correct.

Q. But in the test you did make when you were in Frenchtown last fall, the actual measurement you made was a speed of 165 feet per minute?

A. Yes, sir.

[fol. 532] Q. What difference does it make so far as you know with respect to the eggs, whether the air is going at 135 or 165 feet per minute?

A. I only know that Mr. Smith teaches in his patent that high velocities are necessary.

Q. I beg your pardon, I did not ask you that question.

Mr. Toulmin, Jr.: Let the witness answer.

Mr. Ely: No, he has to answer my question.

The Court: He had to answer the question asked.

(Preceding question and answer repeated by the stenographer as follows:

"Q. But in the test you did make when you were in Frenchtown last fall, the actual measurement you made was a speed of 165 feet per minute?

A. Yes, sir.

Q. What difference does it make so far as you know with respect to the eggs, whether the air is going at 135 or 165 feet per minute?

A. I only know that Mr. Smith teaches in his patent that high velocities are necessary.")

Q. Will you answer my question, please?

The Witness: Your Honor, I am answering the question.

The Court: You say your only source of such knowledge is what Smith teaches?

The Witness: No, I am coming to the next part of it. I [fol. 533] have not answered the question.

The Court: That answer is "yes" or "no", I think.

Q. Do you know whether it makes any difference to the eggs whether the air is going at 135 or 165?

A. I do not know.

Q. You do not dispute, as I undestand it, and you are willing to adopt these charts of Mr. Taggart's with regard to the speed in the James Way machine, are you not, Exhibit No. 24?

A. We have no other data before the Court so I have adopted it as given by Mr. Taggart.

Q. In that chart you find at various points a variation of 120 feet of air a minute and 160 feet of air a minute and 190 feet of air a minute, do you not?

A. I do.

Q. You heard Mr. Shodron testify this morning that the results of incubation were the same th-oughout the whole of the James Way machine, they had no spotted results, as he called it; you heard Mr. Shodron so testify this morning?

A. He said, "spotted results". By "spotted results", I imagine there were no places where eggs were not incubated properly. I don't know what "spotted results" mean.

Q. And the eggs in the James Way machine are put in one place and stay in the one place during the whole time?

A. They do.

Q. And you take it from those two facts, whether the air is moving at 120, 130 or 160 feet per minute, or possibly 110, that does not make any difference to the eggs?

A. Judging from the outside results, it is correct.

[fol. 534] Q. There is nothing in the Smith patent to say what velocity must be used in feet per minute?

A. That is correct.

Q. It simply says that air must be moving with sufficient velocity so as to circulate, maintain and diffuse a temperature the same throughout?

A. In one place, that is correct.

Q. And it does not apparently make any difference to the eggs, whether the air is moving at 165 feet, as you found it in the Smith machine, or 135 feet as you find it in the James Way average; is that true?

A. Well, I made one reading only. The 165 feet which I have testified to this morning was taken by, as I explained, pulling back the curtain, while in there, and putting the anemometer in place, the curtain now away, putting it back, and waiting for approximately three or four minutes and then entering and then reading which I had gotten was at one place only. I do not know what the average velocity would be. I have computed it very carefully and have already testified to the fact that given an area of, let us say, twenty per cent of the net area, and given six thousand feet per minute, and the area being of seventy-five feet, the average velocity through those openings should be, as I think I said, somewhere about 260 feet. My reading was 165.

Q. That 260 feet velocity you got was something you got from pencil and paper deduction, it was not an actual measurement anywhere in the machine?

A. That is true, but the laws of nature, Mr. Ely, cannot be controverted, and if a reading is given by an anemometer averaging up to less than that, the anemometer is absolutely wrong, it cannot help itself.

[fol. 535] Q. You, however, never found a place where the speed of air in the Smith machine was anything like the figure you stated?

A. The reading of my anemometer did not give it.

The Court: How many readings did you make?

The Witness: I made only one, your Honor. You see, I wanted to get some idea of what this Smith machine was

doing. We were consulting over the case. I had no definite data outside of Mr. Taggart's affidavit in the preliminary injunction proceedings, and I wanted to get some figures of my own. These were not James machines. I did not want to disturb Mr. Heisle. I told him what I wanted to use these for, and he consented to my going in, but I had no curtain with the isingglass in. I had to do it quickly and I was a guest and one reading showed me at this point we could not get a velocity at sixty to eighty feet, which I did not see how we could get.

Q. In that theoretic calculation of your, did you make sufficient allowance for loss by friction?

A. Friction does not come into the picture. The volume per minute, divided by area, is velocity, with much friction or less friction. The only difference with friction would be to possibly compress the air one or two per cent. and give a slightly different result.

Q. As a matter of fact, Dr. Greene, is not the type of fan, [fol. 536] which is used by Smith peculiarly susceptible to the friction which may be placed in the path of air delivered therefrom?

A. I should think so.

Q. Now, even your theoretic speed of air—you find points in the James Way incubator in which even that theoretic speed of air is reached, do you not? A. On this chart I find——

Q. You find a number of points?

A. I find marked tray 9, from the bottom, I find a rate indicated of 240 feet per minute.

Q. And what was your theoretical——

A. I have forgotten just what it was. I think it was something like,—I think it was either four hundred or three hundred and twenty.

Q. 260, was it not?

A. Was it? I have forgotten, Mr. Ely.

Q. And you find spots where it even goes up to 340 or 350 feet without any apparent difference to the eggs?

A. I find readings at 340, 350 and 505 near the inlet to the impeller and from what I have heard about the operation of the James machines, I believe these machines work properly at these speeds.

Q. As a matter of fact, you would expect to find variation in the speed of air in the Smith machine at various points, wouldn't you?

A. I would not expect to find much difference in the speed in the different lanes. I would expect to find a lower speed throughout the egg trays, but when you come to the bottom section of the Smith patent where the fabric is placed, I would expect to find a speed of seven or eight hundred feet per minute through that section, which Mr. Smith says must be of high velocity.

[fol. 537] Q. Now, as I understand it, from a consideration of your testimony that was given, you find that in the James Way machine the condition of the air was sub-atmospheric?

A. Yes, sir.

Q. That is, it was low pressure, sub-atmospheric.

A. It was what you might call induced air action.

Q. Inside that casing, the conditions are sub-atmospheric?

A. Within the egg chamber.

Q. In the Smith, it is super-atmospheric, that is, it is higher than the surrounding atmosphere?

A. Yes, sir.

Q. That was the purpose of your making that series of tests with the candle, to show the candle blowing into the James and blowing out with the Smith?

A. That is right.

Q. And that result, within the two machines, was the comparative pressure between the pressure inside the chamber and the pressure outside in the room?

A. The pressure of the atmosphere and the pressure of the chamber.

Q. The pressure of the surrounding atmosphere and the pressure of the chamber?

A. Yes, sir.

Q. Do you know whether that makes any difference to the eggs, whether they are hatched in a sub-atmospheric pressure or in a super-atmospheric pressure?

A. I should think it might make a little difference because of the effect of the pressure of the gases; that is, whenever we have to transmit materials through a septum, the concentration of the materials on the two sides is the thing which affects the flow.

Q. Now, would you say there would be no effect?

[fol. 538] A. I could not say that there would be much, I do not think there is much.

Q. This must have been a matter which you considered of considerable importance, was it not?

A. Oh, yes, quite important.

Q. You considered it quite important?

A. Yes, sir.

Q. As establishing, possibly, some difference in the mode of operation of the machines, and that was the reason you spent so much time on it.

A. More than that. The Smith patent clearly calls for an outlet from the egg chamber into the air. That could not be possible if the egg chamber was sub-atmospheric, that would be an inlet. Therefore, it is quite important to show that in all of the claims here, Mr. Smith has this outlet in his egg chamber which is a thing that does not exist in the James, where the Smith calls for it.

Q. And the fact that the atmosphere in the James Way is sub-atmospheric and in the Smith is super-atmospheric is an important difference in the two machines.

A. That is one of the important differences.

Q. That is why you spent so much time on it?

A. I don't know as we took so much time.

Q. Those readings you took were taken comparing atmospheric pressure inside the chamber with the atmospheric pressure outside in the room, and you measured that with your exhibit here—I do not know what exhibit number this is—in this comparison sheet here you had some thirty points of difference allocated between the two. You found [fol. 539] the sub-atmospheric pressure in the James Way machine was .019 and the super-atmospheric pressure in the Smith was .014?

A. Yes, sir.

Q. That was true?

A. That was the reading determined.

Q. That is Exhibit 52. That is the total difference between the two machines as far as pressure is concerned, was .033, that is thirty-three thousandths of an inch. Now, that is thirty-three thousandths of an inch measured on a column of water which will be supported by the atmospheric pressure, is it not?

A. Yes, that is right.

Q. What is the total column of water which is supported by atmospheric pressure at the level?

A. About thirty-four feet.

Q. About 407 inches, as I recall it?

A. Yes, 408 inches, or 407, yes. 407 or 408—over 400 inches.

Q. That is the normal atmospheric pressure supports a column of about 407 inches of water at sea level and the difference between the atmosphere inside the James and the atmosphere inside the Smith is thirty-three thousandths of one inch?

A. Yes, sir.

Q. Ordinary barometric pressures are measured in inches of mercury, are they not?

A. Usually.

Q. What is the atmospheric pressure of mercury at sea level?

A. In round numbers, thirty inches, twenty-nine and ninety-eight one hundredths.

Q. What is the ratio between mercury readings and water readings?

A. 13.65.

Q. That is one inch of mercury equals 13.65 inches of water?

A. That is it.

[fol. 540] Q. Will you reduce this .033 to mercury, for me?

A. That would be roughly, .002 inches of mercury.

Q. That is about——

A. About two thousandths.

Q. About two thousandths of an inch, roughly. Now, as a matter of fact, there is a variation in the atmospheric pressure right here at Buffalo, any time you want, during the day, much greater than that difference between the Smith and James, is there not?

A. Yes, that is very true, and with it you would get the variation in the cylinder, because these are all relatively atmospheric. If the atmosphere in Buffalo goes down an inch of mercury or two inches, then this pressure in the James goes down the same amount, and it is relative.

Q. And in the Smith the same?

A. Yes, sir.

Q. The pressure goes up and down as the atmospheric pressure goes up and down?

A. Yes, sir.

Q. Will you look at the Buffalo Evening News of yesterday and see what the barometric pressure was at 8 P. M., 8 A. M. and noon?

A. The barometric reading recorded in the Buffalo Evening News for Wednesday, February 7th, this, therefore, would probably be the day before, was 30.24 at 8 P. M.; at 8 A. M. 30.18 and at noon 30.22.

Q. That is, the variation in the atmospheric pressure here in Buffalo yesterday or the day before yesterday was far in excess of the difference in atmospheric pressure inside a Smith and James, it was far in excess of that?

A. There is no atmospheric pressure. You mean chamber pressure?

[fol. 541] Q. Yes.

A. That is correct.

Q. The difference in chamber pressure in the Smith and James was a mere fraction of the difference in Buffalo here in one day?

A. Yes. It makes all the difference in the world, though, whether it is sub or super.

Q. That is to say, the condition of the James in the morning and the condition of the Smith in the afternoon might be the same, as far as pressure in the chamber is concerned?

A. That is correct.

Q. And eggs are only concerned with the pressure of the air immediately around them?

A. I think that is right.

Q. What is the relation of pressure to elevation?

A. I don't know what you mean by that.

Q. Well, as you go up from sea level, your pressure level, your atmospheric pressure will vary, will it not?

A. Yes, sir.

Q. And what is the variation of .033, in feet, how is that represented in elevation?

A. I don't know. I could look it up in some hand book, if you would give me time, but I don't know what it would be.

Q. I wish you would check that for a moment. With this table before you, will you work out the difference in elevation that that thirty-three thousandths of an inch difference in pressure in the Smith and James represents?

A. I am reading from the copy of "fan engineering", by the Buffalo Forge Company, copyrighted 1933, and owned by Mr. R. D. Madison, on Page 22 where I find a table entitled—"altitude density table" and where I find in Column 1, altitude in feet, and I find in the third column, [fol. 542]of groups of three, the barometric reading, I find that the difference for 100 feet is .11 inches of mercury.

Q. Working it out from that, what would be your difference in elevation?

A. Then assuming a difference of zero point zero two inches of mercury, if we divide this by .11 and multiply by 100, we should get the answer which you ask, which is about two feet.

Q. That is, there is a difference in elevation of about two feet which would cover the entire difference in the pressure within the two chambers of the two machines, that is true?

A. Yes, sir.

Q. That is about the height of this table?

A. Yes, sir.

Q. That is, if we put a James machine up as high as this table and the Smith machine rested on the floor, we would have exactly the same pressure condition in the two chambers?

A. That is probably correct.

Q. That is the important difference between the Smith and James Way machines?

A. Yes, it is very important difference because of these two claims. You see, Mr. Smith is the author of the claim——

Q. I am asking you as a practical matter?

A. Yes, as a practical matter it is very important.

Q. If a man had a Smith machine and he wanted to obtain the same results in the James Way machine, all he would have to do would be to jack the machine up two feet?

A. I did not say that.

Q. And you would get the same pressure?

A. Yes, sir.

Q. The eggs would be under the same pressure as they [fol. 543] are in the James Way.

A. Yes, sir.

Q. That is the big difference between the James Way and the Smith?

A. Oh, no, that is not the only difference.

Q. That is an important difference?

A. No, that is not the important difference in those pressures, no, indeed.

Q. That is to say as far as the eggs are concerned if our store-room down there happened to be two feet lower than your store-room where you had your machine you would find the same pressure conditions in the James Way egg chamber in our store-room as the Smith in yours?

A. No, to be also facetious, it would not be the same because the places would be different, but in the same room it might be so.

Q. Now, will you take the Smith patent, please. I wish you would look at the Smith patent a moment, and particularly at the drawings of the patent. While you were talking about the matter of the circulation of air in the Smith machine, you called the Court's attention to Fig. 1, didn't you?

A. I suppose I did. I used both figures.

Q. In that figure there is one opening 28 shown at the top of the column, is there not, on Fig. 3, and——

Q. Fig. 1, I am talking about.

A. I beg your pardon, in Fig. 1 there is one 28 at the top of each of the egg columns.

Q. That looks as though the air that came up through the column, might all go out through the opening 28, looking at that one figure, there might be some basis for that.

A. Yes, if there is only one in that whole chamber.

[fol. 544] Q. If you turn over to the other figure, you will find there is only one opening in the whole length of the machine.

A. Over each egg chamber, that is correct.

Q. There is only one opening?

A. Yes, sir.

Q. You recall the testimony of Mr. Taggart, and I think I said in some of my remarks, only one per cent. or one-half of one per cent. of the air which was circulating in that chamber passed out of the opening. What becomes of the remaining 99 per cent. of the air?

A. It was recirculated.

Q. How is it recirculated?

A. It is drawn in from the egg chamber; looking at Fig. 1, I think that is the best; it is drawn in from the top of the egg chamber in the space above partition 22 and enters the fan chamber on the suction side 21.

Q. Then what happens; what happens to that 99 per cent.?

A. Then the 99 per cent. is met with one per cent. of cold air, entering through the restricted entrance, not the restricted exit, but the restricted entrance, and it is then warmed, if necessary, in the coils 23, because coils 23 are only warming coils.

Q. It passes the coil 23 before it gets in the fresh air, or about the same time?

A. Not necessarily, the fresh air will be sucked in, and just how the streams are flowing in there, I do not know, it may be all the recirculating air is heated up and given that extra heat up to the cold air, in any case it is well churned. Then, if we look at Fig. 3 again, we will see at the right-hand side the steam pipe 26 which introduces into this air——

[fol. 545] The Court: 26 in Fig. 1?

The Witness: No, your Honor.

The Court: That is the wrong one.

The Witness: Yes. I should say that would be the return air. Steam is introduced so you have a mixture of steam, fresh air and return air 99 per cent., one per cent. of fresh air and a little steam churned together, and delivered by the fan 18 into the corridor below.

Q. That is to say, the 99 per cent. of the air which comes up through the egg column passes over the beam, through the fan and back down through the corridor?

A. That is right.

Q. Then it goes into the column and starts another cycle?

A. That is correct.

Q. And you are taking off all the time only one per cent. of the air?

A. That is correct.

Q. For instance, if you have a stream of water and you are taking a little water off for the mill race, but the big volume is going on down the stream——

A. That is right.

Q. In the same way you are shunting one per cent. of that volume out through opening 28?

A. Yes, sir.

Q. And the remaining 99 per cent. is going around in a circle?

A. That is correct.

Q. And the air, as it comes up over the top of those beams will carry with it any heat, will it not, it will carry heat with it?

A. The heat which it has, it will carry with it.

Q. And it will carry that heat with it, modified by one per cent. of cold air and whatever steam comes in, it will [fol. 546] carry that heat to the bottom and start on recirculation?

A. The one per cent. I have figured in the Smith machine per one thousand eggs, averaging it as Mr. Taggart said it should be averaged, although only one per cent., amounts to 900 British Thermal units per day per thousand eggs and the moisture means 2540, and although only one per cent., it represents almost 100 per cent. of the biologic heat which is generated by the eggs.

Q. I understand your argument and you see what I am driving at, but just the same I wish you would answer my questions and not argue the case. Dr. Greene, that 99 per cent. of the air that comes up over those columns carries the heat that happens to be at the top to the bottom, carries that around to the bottom?

A. That is correct.

Q. Now, suppose we put, as the Court asked the other day, suppose we put the hot eggs at the top of the column in the Smith machine and that air is going over those eggs, and 99 per cent. of it is going over those beams, and back down to the bottom, why will not the heat be carried from those hot eggs around in the circuit?

A. What was your question?

Q. Why will not the heat under those conditions be carried around the circuit?

A. Because one per cent. of that heat, your Honor, which in this case no more than one per cent. of this heat, your Honor, would be equal to the heat removed by this waste air, no matter where it goes or how it goes out, and must be replaced by steam heat on the other side.

Q. But 99 per cent. of the air is sweeping over the eggs and sweeping over the beams and going back down the [fol. 547] corridor, is it not?

A. Yes, sir.

Q. And carrying that heat with it which it got from those eggs?

A. If it is not carried out by the cold pipe which you use in the Smith machine, when it gets too hot.

Q. There is no cooling pipe in the Smith patent?

A. No, that is not the arrangement, as stated in the Smith patent either. It is very clear the Smith patent can only be for a machine as described in the patent to get what he calls for.

Q. That is what I am talking to you about and exactly what I am getting at, Dr. Greene. 99 per cent. of the air comes sweeping up over that column and sweeping over the eggs, carrying the heat to the bottom?

A. No, it may have given it up to the eggs.

Q. I am assuming it is the hot eggs, and I am talking about the assumption in the Smith patent, that in a structure like that we will put the hot eggs at the top. If we did that, the heat from those hot eggs would be carried in the 99 per cent. stream around to the bottom; you agree with me on that, do you not?

A. That is correct.

Q. That heat from the eggs is not going to all take to and run out through that opening?

A. No.

Q. It is going into the stream and go around?

A. The 99 per cent. of the air will, but the one per cent. that goes out will carry with it the heat from the eggs.

Q. I will let you talk about that after awhile. If we put the cold eggs in at the bottom of the column, those cold [fol. 548] eggs would receive the heat which came from the hot eggs at the top?

A. No.

Q. Let us go over that a moment. You said the heat from the hot eggs at the top of the column would be carried by the 99 per cent. of the air in circulation down through the corridor, did you not?

A. If I said that, that is a misstatement.

Q. What would become of that heat?

A. The heat from the eggs, take it by and large, which Mr. Taggart wishes us to, which is I think correct, the largest part of that goes out. The 99 per cent. of the heat in the air, which is the result of a large quantity of air being carried around is carried over, but 99 per cent. of the heat of the eggs is not carried back.

Q. Let us go over that again. If your air column comes up through eggs, and 99 per cent. of that air goes over the beams, one per cent. only goes out the opening?

A. Correct.

Q. That 99 per cent. will carry with it whatever heat conditions there might be in the eggs it passes over last, is that not so?

A. No.

Q. Will not the heat at the top of the column, if those are hot eggs at the top of the column, will not that heat be imparted to the air stream as it passes over them?

A. It will be added to it.

Q. And it will be swept with that air column over the beams?

A. 99 per cent. of the air with its heat goes over the beams. That heat is not the result of the egg heat alone, it is the net effect of egg heat and air heat when it first struck the column.

Q. I understand that, but the heat of the eggs that are [fol. 549] in the top of the column, having imparted heat to that air, whether that is all the heat or not, I am not asking you, but they have imparted heat to that air, you understand.

A. Yes, that is true.

Q. Then, that heat is carried in that air down through the corridor?

A. It is not.

Q. What becomes of it?

A. It runs out through the atmosphere for about 95 or 98 per cent. of it goes out through 28, when we consider it as a uniform amount.

Q. This heat I am talking about has continued past the beams in the meantime?

A. But Mr. Taggart properly said we would not tag each British Thermal unit, we could not, and when using that method, 99 per cent. of the air goes around, that is correct, and the heat which goes out, goes out but the heat which goth out through 28 is the heat put in by the eggs and therefore, using Mr. Taggart's theory, that heat does not go around.

Q. You are assuming all the heat that came in from the eggs at the top of the column went out at the top through 28?

A. I am assuming all the heat, if we do not tag individual heat units, goes out at the top.

Q. That heat of the eggs which are up at the top will go out through 28 notwithstanding 99 per cent. of the air

goes up over the beams and around to the bottom, that is your testimony?

A. Yes, sir.

Q. So that heat from the eggs all runs over to 28 and goes out?

A. I am trying to use Mr. Taggart's method.

Q. I am asking you to give me a fair answer to my [fol. 550] question?

A. I am answering your question. Without ...gging a particular British Thermal unit, which comes out into the stream, that heat unit would get back, but treating it as a general proposition and taking it in total, the heat leaving then is put in by the eggs.

Q. What you are saying is that more heat goes out through those openings than is put in by the eggs?

A. Yes, sir.

Q. Heat is supplied by two sources, one hot air or hot water pipe——

A. Yes, sir.

Q. And the other by the eggs in the later stages of incubation?

A. Yes, sir.

Q. That is where you get your two sources of heat?

A. Yes, sir.

Q. You cannot pick out and divide one heat unit which comes from the eggs and one from the pipe?

A. I do not think you can.

Q. You cannot say that a heat unit which comes from the eggs goes out through opening 28?

A. Some heat units do.

Q. That is to say, if you did not have the heat units given up by the eggs in the later stages of incubation, you would have to add that much more heat to the water pipe and heat enters through these two sources, and no particular individual heat goes out that opening?

A. Yes.

Q. Although it may be more heat than given up by the eggs?

A. Yes.

Q. And then following that conclusion, the heat will be carried from the eggs at the top of the column, if those are hot eggs, down into the stream, going down the corridor, and down to the lowermost trays, is that not so?

A. For a particular egg, yes, but for the body as a whole, no, it could not be so.

[fol. 551] Q. And if we have 1,000 eggs in there, the heat from a certain proportion of those thousand eggs will go up over the beams and down the corridor?

A. If we tag the British Thermal unit, yes, but some of the others tagged will go out.

Q. Then, is it not a fact that if you put hot eggs at the top of the column in the Smith machine and cold eggs at the bottom, then the cold eggs at the bottom would receive heat units carried by the current down to them?

A. If you take the individual heat units, that is true.

Q. In any event that is true, whether you take the individual heat units or not?

A. It is not true in any event.

Q. Now, one per cent. of the air only has gone out of that opening and 99 per cent. of the air has swept over all those hot eggs and come into the corridor and come down into the cold eggs; you say that current carries no heat unit from the hot eggs at the top to the cold eggs at the bottom?

A. You say "in any event". I know and I have found where it does not happen.

Q. It may happen?

A. It may not happen in the conditions you say, but in the conditions I know of, it would not happen.

The Court: He is saying the heat.

The Witness: I am saying the heat goes out of 28.

The Court: You could not distinguish the heat from the eggs and heat from other sources, as they go over the eggs they are mixed together.

[fol. 552] A. If you do not take it, treat it as a whole. There is more heat leaves than the eggs give off.

The Court: His question was not directed to the heat degree, his question is whether there is a certain amount of that heat carried down to the lower column.

A. If we tag a British Thermal unit, there is.

Q. And you cannot tag a British Thermal unit?

A. No, sir.

Q. Nevertheless, that thing takes place?

A. Under certain conditions, I think it does.

Q. I am asking in the Smith machine, that will happen, will it not?

A. If the hot eggs are at the top and the cold eggs at the bottom some of the heat delivered by the hot eggs may get down to the cold eggs.

Q. Will get down?

A. Will get down if we do not separate it in this peculiarly hypothetical method I have used.

Q. Which is impossible to use?

A. Yes, sir.

Q. Then, would you say in that reversed arrangement of eggs in the Smith machine we have been talking about, the units of heat would be carried from the eggs in the later stage of incubation to the eggs in the earlier stage?

A. I think you could use that expression for part of the eggs.

Q. That is, for part of the eggs?

A. Not all of them.

Q. That is due to the fact that the air is cycling in recycling currents with only one per cent. going out in one complete cycle, is it not?

[fol. 553] A. This assumption, which you are making, would be true if there were only 30 per cent. recirculated, that is the highly hypothetical condition which is entirely different from that used by Mr. Taggart and which I think is the right one, which clearly indicates the heat is not sent back in any amount.

Q. Where you recirculate and so-call tag your heat unit, it does get around?

A. It is common sense.

Q. It is common sense to say it gets around whether you tag your heat units; it is common sense if your air is moving in a closed cycle, you will carry heat from the eggs in the later stages of incubation to the earlier stages, whatever the arrangement?

A. If you use a closed circuit, it is true.

Q. And Smith is a closed circuit?

A. Smith is not a closed circuit.

Q. Well, 99 per cent. goes around and one per cent. goes out?

A. And one per cent. takes out more heat than is put in.

Q. And you have to have a certain amount of foul air taken out and a certain amount taken in?

A. Yes, sir.

Q. And you also know, do you not, that you cannot carry on incubation without a certain percentage of fresh air going into the machine and a certain percentage coming out; in other words, you cannot have a one hundred per cent. closed circuit in an incubator?

A. That is very true.

Q. And you have in the Smith machine, in practical working, a 99 per cent. closed circuit?

A. Yes.

[fol. 554] Q. And that 99 per cent. closed circuit is going to carry the heat units from the eggs in the later stages of incubation to the eggs in the earlier stages, by that arrangement?

A. The 99 per cent. arrangement you speak of is in error, I would rather call it a 105 per cent circulation of air. The closed circuit is a closed air circuit, not a closed heat circuit, and what you say is a closed heat circuit is almost entirely open.

Q. And a closed circuit carries the air?

A. Yes, sir.

Q. Do you agree with this statement, "But, when as in Smith, the air moves in cycles through the corridor and tiers, it makes no difference after the first cycle which way it moves through the egg trays, whether from bottom to top or from top to bottom or whether it first strikes warm eggs, or first strikes cool eggs, for in every cycle after the first, the current when passing warm eggs will gather up their heat units and carry them to the cool eggs precisely as claimed and, in the same way, produce that uniformity of temperature which is the thing sought by the art and achieved by the invention." Look at that statement of Judge Woolley's in the Hillpot case and see if you agree with that?

A. I do not agree with this statement because the cycles are not closed cycles as Judge Woolley was convinced was probably the arrangement.

Q. You are right and Judge Woolley was wrong?

A. Yes, because the Judge did not realize practically more heat went out with this one per cent. of air.

[fol. 555] Q. I understand your argument perfectly, you need not go into that for my benefit, or perhaps for the Court.

The Court: No, he has been over it several times.

Q. Do you agree with this statement in that opinion? This is the statement of the per curiam decision of the Court of Appeals of the Sixth Circuit in the Blum case. In that opinion the subject of the Petersime case was discussed and it is said, "Some acceptance was given to the theory that there is no infringement, unless the circulating air strikes first those eggs which are in the last stages of incubation and are generating the greatest heat. In considering a construction where the main current of air is brought in from outside, and in thinking of only the first circuit which this air makes, that thought seems applicable.

"Counsel now point out with much force, that in a case where the air does not come in from the outside in large volume, and that in any case during the circuits after the first one, no one point in the circuit gets the air ahead of any other point, in an absolute way. Which point gets it first depends upon where we consider the circuit to begin. We think we need not consider the effect of this defect in the reasoning—if it is a defect—of our former opinion.

Do you agree with that statement that there may have been a defect in the reasoning of the Sixth Circuit in their Petersime case?

[fol. 556] A. I believe, if I get your question, that not only does it depend on where you start, if you have a circuit from which you remove air and heat, you cannot say that the heat is returned unless you put your hottest eggs at the bottom.

Q. That is, unless you have a 100 per cent, enclosed circuit or a 100 per cent. closed circuit, you say you have to have a 100 per cent. closed circuit?

A. You could not say that because you have always a heat loss from the walls, which I have not considered in this discussion, which would make it worse. You could not say that in any case.

Q. You said awhile ago the heat would be carried by 99 per cent. of the air from the hot eggs to the cold eggs if the order was reversed?

A. Some heat will, not the heat——

Q. Now, you think possibly the Court of Appeals of the Sixth Circuit was wrong when it said that might have been a defect, you think they were right in the first place?

A. I cannot just quite see what they are getting at, sir.

Q. Assume, for a moment, that the Court of Appeals held in the Petersime case, which came before the Blum case, and before the Hillpot case, that the air which left the fans had to strike the hot eggs first, and assuming that Counsel for the Smith patent in the Blum case, called attention to this closed cycle of air, and the Court of Appeals of the Sixth Circuit said, "Considering the defect in our former reasoning, if it be a defect", you think the Court of Appeals was right in the Petersime case and should not have backed up in the Blum case?

A. Yes.

[fol. 557] Q. That is the history, so that you may know. You think the Court of Appeals was right in the Petersime case and wrong in the later Blum case?

A. Yes.

Q. And you think Judge Woolley was wrong in the Hillpot case?

A. I do.

(Recess until 2 P. M.)

Q. Dr. Greene, I wish you would look at Plaintiff's Exhibit No. 27, and particularly those two arrangements shown in the top row over the heating arrangement of Boling- Jensma at the end of the hatch, and arrangement of Boling-Jensma one day later. Just look at that for a moment.

Now, in that arrangement, you observe that the air—assuming that this is a correct illustration of the principle of the Boling machine—you note that the air goes up from the fan and then down through the egg column; that is correct, is it not?

A. I notice the curve of the arrow—a curved line represent- motion of air which goes up on one side, where there are no eggs, and down on the other side.

Q. And you note that in that case, the air, as it comes from the fan, will strike first the cold eggs and then move to the hot eggs?

A. I note that that air which does not go out of the vent at the top will come around and bathe the cold eggs and then the hot eggs.

Q. And then, from the hot eggs go back through the fan and then back again to the cold eggs, minus the small [fol. 558] amount that goes out of the opening?

A. Yes, and plus the amount which comes in at the bottom below there, yes, sir.

Q. Now, in that case, then, the air in its cycle, disregarding that small interchange, the air in its cycle strikes first the cold eggs, then goes to the hot eggs, then to the fan and back to the cold eggs?

A. If you neglect that quantity that is there.

Q. Yes, overlooking that small percentage that passes out of the opening.

A. That is a small percentage of air but not a small percentage of heat.

Q. Yes, I understand. Now, do you agree, then, assuming that that is a correct construction of the Boling machine, that that operation is substantially identical with the Smith incubator and its process of operation is the same, as they both contain a process of setting of eggs in various stages of incubation in a forced, fan impelled draft of air in repeated circulation of the same body of air within the incubator in continuous repeated cycles through the mass of eggs so that the air taking up a full complement of moisture a premature drying of the eggs is prevented?

A. I don't agree with that.

Q. You do not agree, then, with Judge Cavanah in his decision in the Jensma case in Idaho?

A. I think I have explained my reason for the difference.

Q. Yes, I think so. I just wanted to see if I could find some case in which you were in agreement, some recent case in which you were in agreement. You also disagree, assuming that this next group is a correct representation [fol. 559] of the arrangement of eggs in the Robbins machine which was involved in the Waxham case?

A. I believe that is a possible arrangement of eggs in the Robbins machine.

Q. That is, we have the eggs all sandwiched in, with different endothermic and exothermic eggs sandwiched through the machine?

A. Yes, sir.

Q. And we have a continuous cycling movement through those eggs and through the fan.

A. We have a continuous movement but not a complete cycle because of the small quantity of air let out and let in, and the large quantity of heat let out and let in.

Q. Do you agree with this statement of the Master in that case, finding infringement of the Smith Patent:

"If we disregard the small amount of air that is constantly changing through the restricted opening, the air is circulated in closed cycles, and the order in which the eggs are arranged does not seem to affect the process, so long as the eggs are arranged at different levels so that the circulating air may reach all of them?"

A. I do not agree with the statement completely as given here, because it is true that he is disregarding a small amount of air, but I do not believe the Master could have considered the large amount of heat which is associated with that; and, therefore, I differ.

Q. That is your same point that you sought to make this morning?

A. Yes.

[fol. 560] Q. Now, will you look at that next group, the Snow showing. That is practically the same as Robbins, is it not?

A. Yes, it is.

Q. Do you agree with this statement of Judge Molyneaux,

"Claims 1 and 2 of the patent are not limited in their terms or by the proceedings in the Patent Office to the setting of the eggs which are in various stages of incubation in any order or sequence, nor to the shifting of eggs during the process but on the contrary are of sufficient breadth to cover any arrangement of eggs in various stages of incubation?"

A. I do not agree with that statement.

Q. You are out of step with these later decisions on the Smith Patent, then?

A. Those that you have read, I differ with.

Q. Now, suppose, for example, we did not let as much heat out through the openings, through the vent openings, as was given off by the eggs; in other words, not as much heat escaped through the openings as was given up by the eggs or by other sources, what then would happen?

A. The heat, of course, would rise, and you would soon get a condition which, from all that I have read, would prevent proper incubation.

Q. Now, with regard to the James Way machine, do we have in the James Way machine the air circulating in repeated cycles through the machine?

A. We do not.

Q. I will go to that point a little later. Now, in the James Way machine, as I understand it, you can set the eggs in [fol. 561] any order in the egg chamber, and it makes no difference, in regard to the process?

A. That is correct.

Q. And as one of those, perhaps, thousand arrangements, you might arrange the eggs with the eggs in their inverse order of their age, or in the exact order of their age, from top to bottom, might you not?

A. I think you might, yes, sir.

Q. And you would still get the—that would not affect the operation of the James Way machine?

A. I don't think it would.

Q. And you might even set them in there one day, and come back with your next setting and rearrange the eggs, if you wanted to; that would still make no difference in the James Way operation.

A. I don't just understand the statement.

Q. You might shift the position of the eggs; in other words, if you moved the position of the egg trays during the period that they are in there, it still would not make any difference in the operation of the James Way machine?

A. I think the machine would operate, yes.

Q. Now, coming back for a moment to that matter of the possible recycling of air in the James Way machine, do I understand you to say that you do not think that is true—I mean, that is your position?

A. That is my position.

Q. Now, when you were calculating the amount of air that left the James Way machine, how were you figuring that?

A. I figured that by actually measuring the air leaving the machine by a small anemometer, and the amount which I obtained was 746 cubic feet per hour for the whole machine, which had 4,200 eggs in it, which gave me 177 cubic [fol. 562] feet of fresh air per hour per thousand.

Q. Now, what speed did you find the air was coming out of those openings?

A. I got two different readings. In one of them, the quantity was 727 feet per minute, and in the other one it was 412 feet per minute, and I averaged those two.

Q. And you found that, I take it, by some calculation with respect to the area of the openings and the speed at which the air was going through?

A. Yes, sir.

Q. That is, you used the four openings and the speed of the air going through, is that right?

A. Yes, a small anemometer, and the speed coming out; then, took into account the size of the opening, which was one inch in diameter.

Q. And by that process you arrived at the amount of speed of the air going through, is that right?

A. Yes, a small anemometer, and the speed coming out; then, took into account the size of the opening, which was one inch in diameter.

Q. And by that process you arrived at the amount of air which was coming out, say, in a minute.

A. Yes.

Q. Did you make that calculation on all four openings?

A. I have got the left and the right holes, using two different anemometers and checking them. I used the right hole there because it was small, and then I put a cone over the two holes and measured it, and I worked on that one side, as I recall it now.

Q. In figuring the amount of air which left the machine, you made your calculation with all four holes open, did you not?

A. Yes, sir. I have the left small integrated reading and the right small. Now, as I remember them, we worked on the two—you know, there are four holes right and left.

Q. Yes.

A. And I think I integrated, as I have it here, over the left small and right small.

[fol. 563] Q. You remember when we were down at the warehouse here, the other day, and you were demonstrating the machine to his Honor?

A. Yes.

Q. There all four holes were open?

A. Yes.

Q. And you remember there was a general chorus from the James Way people that that was the way the machine was operated normally?

A. When filled with eggs.

Q. And that is the reason you made your calculation with all four holes open?

A. Yes, sir.

Q. Do you not know, as a matter of fact, in normal operation of the James Way machine, only two of those holes are open?

A. I don't know that. As I understand it, they close down as the number decreases.

Q. Now, if the normal operation of the James Way machine was with only two holes open, you would have to make a considerable change in your calculations there, would you not?

A. You might; the holes on one side usually give less, as my results show, than the other, and it depends on which of the two holes you would close. In one case you would take over half of that, in the other case you would take less than half.

Q. You notice, when we were down at the machine the other day, that the air was going into one of the holes, was it not?

A. Not continuously. The smoke, if you would notice that, was coming out of all of them, but at one of those holes there was suction in and a puff out, but at a short distance away from it, where you could get rid of the effect of the impeller passing and got a steadier mean flow, you found [fol. 564] that there was a blow out. That is the way I observed it. I was not right up beside it.

Q. That is to say, as I understand your testimony, you said there was fluctuation of air going in and coming out, and going in and coming out, through those holes?

A. As shown by the candle, you could see it go in and you could see it come out, but as soon as the candle was taken out about six inches, as I recall it, there seemed to be a steady stream out. That was my observation.

Q. And you said, from that, and you drew your conclusions from that, that fluctuations at openings indicated to you there was fluctuations of air through the whole machine?

A. I said it might be possible because at that one hole there was that fluctuation, and the impeller is not in the proper form of casing. There are partitions, there are pipes, and also the air is being discharged out in all directions around the sides, so that I think there is, possibly, at

that speed the oscillation and the pulsation which you saw.

Q. That is to say, part of the time the air is going in and part of the time it is coming out?

A. At that place, through part of the opening; that is, it was down at the bottom if you recall that, you got it going out, and as you put it up towards the top it seems to come out all the time.

Q. And the fact that the air was fluctuating in and out through those openings would reduce the total amount of air that was coming in—or was coming out, rather, during one minute?

A. If you took it instantaneously, yes, but if you took it over a minute, the results you got over a minute would be [fol. 565] the net amount.

Q. That is to say, as air was coming in and going out, there was not a constant flow out of the hole, constant outflow of air out of that hole?

A. The outflow was not uniform. It was a pulsing flow. The net result during a minute, though, would be an outward effect.

Q. Now, if, as shown in the testimony here yesterday, the normal operation of the machine is with only two holes open, you would have to divide your amount of air outlets by two, would you not?

A. Not by two.

Q. You would have to take half of that?

A. You might divide it by more than two or less than two. It would have to be reduced, though.

Q. In other words, that amount of air flow or amount of air interchange in the James Way machine is not a fixed thing in the operation of the machine?

A. It depends. It is not fixed because it depends upon the openings which are open.

Q. And the man can adjust that as he finds operations may require?

A. Yes, sir.

Q. And the fact that he has got four openings would indicate to you, would it not, that the four openings was the maximum amount which might be required without some special conditions?

A. No. I have made calculations on this machine, and I find that, in order to keep the carbon dioxide constant in that machine, carrying the number of eggs which it does,

it should have 1,000 cu. ft. passing per hour, as the machine which I tested was not discharging that much. The design of the machine and the theory underlying the holes, as I [fol. 566] understand it from the engineers, is to maintain a definite CO2 content of 16 parts in 10,000 and if you figure that in the results of the West Virginia experiment station, it comes out that there should be 1,000 feet per hour passing through the machine, and that was what fixed these sizes, as I understand it.

Q. You recognize the fact, do you not, that the adjustment of those openings is determined by the weather conditions outside, in a large measure, and those openings are adjusted to take care of different weather conditions?

A. They take care of weather conditions provided the pan is not sufficiently large; as I understand it, from the testimony which I have heard.

Q. As a matter of fact, those openings are adjusted so as to get the amount of air outlet to compensate for difference in weather conditions, is that not so?

A. No, sir.

Q. You do not understand that to be so?

A. Not completely, no.

Q. If there is any contrary statement in the book of instructions here, you would have to yield to that, would you not?

A. No, I wouldn't.

Q. That is to say, the amount of air which is taken out is variable and the same thing is true in the Smith incubator, is it not?

A. That is true.

Q. And you may throttle down that amount in both the James Way and the Smith, as far as you like?

A. I have never seen a Smith machine operating with no air circulation. When I visited the plant at Frenchtown, I couldn't get any reading on my anemometer on the air [fol. 567] inlet, and I presumed that, at that time, they had cut off all air in order to raise the humidity, and in that machine I do know you can close them off completely, you can close off the holes, but I have never seen it done.

Q. And you have a range of intermediate positions, according to what conditions may be, for successful incubation, is that not right?

A. In the machine inside, taking all the elements, yes, sir.

Q. That is to say, your calculations were made of this

amount of air interchange with the maximum holes open all the way, I think you said; that is true?

A. Yes, sir.

Q. Now, let us take a look at the drawing of the James Way machine. Now, in the first place Dr. Greeene, this drawing of the defendants' machine, introduced by the defendants, Defendants' Exhibit No. 33 is not accurate, is it, in certain particulars?

A. I do not know in what particulars it is inaccurate, but it is made to illustrate the way in which the device operates.

Q. Now, one of the inaccuracies to which I refer is the fact that it shows the upper, what we call fan housing against the lower board, is that not right?

A. Yes, that is correct; that is in this picture. This is not the one that was issued. If you will get the one submitted to the Court which was not colored, I think you will find some differences.

Q. But that is shown correctly in the plaintiff's drawing?

A. May I point out that the Counsel presented to me a colored picture which is not quite the same as this one, Exhibit 33.

Q. But the plaintiff's drawing is accurate, is it not in [fol. 568] that respect?

A. The plaintiff's drawing shows, without cross-hatching, because the suction is taken directly through the middle at this point, a return duct above the impeller and the entrance, and diagrammatically, I think that is correct.

Q. And that is true of both of these views of Plaintiff's Exhibit No. 14?

A. Yes, sir, that is correct.

Q. Then, let us look at those for a moment. Now, this thing that we have denominated a fan up here, that we have called a fan, which you say is not a fan, throws the air out into the space formed by the upper and lower housing, as we have called it?

A. That is correct.

Q. That is true, is it not?

A. Yes, sir.

Q. And a certain proportion of that air goes out of the outlet opening in the upper left hand corner?

A. On Exhibit 14, that is correct.

Q. And the main body of air goes down through the channels in the front and rear?

A. Yes, sir.

Q. And then, when that body of air comes down, it is discharged at the bottom of the cabinet, and then it comes up again through the egg chamber, does it not?

A. It comes up through the egg chamber after being mixed by the mixer, and mixed with fresh cold air which comes in.

Q. But with the addition of increment of cold air, that air continues up around through the egg chamber, does it not?

A. That air which is left continues up around the egg chamber.

Q. And then it is again picked up by this fan and carried down through the same cycle?

A. That is correct.

[fol. 569] Q. And then, except for the small amount of air, or except for the amount of air—I will cut out the word "small" in deference to you—except for the amount of air which passes out of the outlet opening, and the amount which comes in at the base of the machine, that body of air is moving in a closed cycle?

A. The body of air has one other element to it, which you have omitted, namely, the humidifying pan which absorbs, from the active heat of the air, a large quantity of heat much more than the eggs in this incubator, which does not have a hatching section, and, therefore, eliminates 64 or 70 percent of the total heat passing through.

Q. Yes, but you are now arguing the case, Dr. Greene.

A. I am telling the facts.

Q. I asked you simply whether the body of air, except for that portion that goes out through the outlet opening and comes in through the inlet opening, that body of air goes around in a closed cycle?

A. That is correct.

Q. Now, I understand then, that the James Way incubator will operate in the same way, whatever be the order of arrangement of eggs; that is true, is it not?

A. I believe that is correct.

Q. And that includes what we have chosen to call sandwiching of the eggs?

A. Yes, sir.

Q. Now, does not a certain amount of heat interchange take place in the chamber between the hot and the cold eggs that are sandwiched in there?

A. Oh, yes, certainly.

Q. And is not the body of heat that is imparted to the air carried around with the same distinction that you have [fol. 570] made with regard to the Smith patent: is not that body of heat carried around through the channels and back up through the egg chamber?

A. No, because of the heat which is removed through the orifice and the heat which is removed by the water pan.

Q. In other words, that is exactly the same thing that you said with regard to the Smith patent?

A. Yes, except one thing in the Smith patent: the hottest eggs being at the bottom of the current carried through the egg chamber, what Smith says is done, can be done. It is the only way in which it can be done.

Q. You are now referring to the detailed description in the specification of the Smith patent?

A. Yes, sir.

Q. You are not, in that respect, referring to the words of the claims. You are referring to the detailed description in the specification?

A. I am referring to the claims, because the claims are met, and we understand them, by looking at the specifications.

Q. Yes, I understand your argument perfectly. I understand what you are driving at.

By the Court:

Q. What is the effect of there being no outlet on the opposite side? The current goes both ways. Your outlet is on one side. What is the effect of the fact that there is no opening on the other side, on the circulation, I mean?

A. The only thing is, your Honor, that the air on the side on which there is no outlet would probably move in the channel of lower velocity because there is a smaller quan- [fol. 571] tity. If the resistance to each one of those channels is the same, and the resistance through the channel is the same, and on one of the channels we have assembled one, or two or three per cent of the air, then, not having as much air to pass through there, the velocity would be slightly reduced.

Q. How would it affect the temperature of the air?

A. I think, your Honor, that it would not affect the temperature because the mixing has taken place before you reach that opening. The churning in there over the water column should mix it up fairly well.

Now, I do believe that, possibly, the air passing down one side of the channel might be more humid than that near the center, and that is the purpose of the stirrer below, to take the air as it comes down through those channels, and, because the water pan does not extend completely across the machine, but is only on each side of the impeller, you would get possibly a laned flow. By "laned flow", I mean flow in which certain of the air would be more moist, or hotter, or contain more fresh air than another part.

Q. Would there be any difference in velocity or speed of the air?

A. No. It is temperature and humidity of the air I am referring to now.

Q. I say, would it affect the velocity?

A. It would only pull the velocity down on the front side because you are handling less air through those channels.

By Mr. Ely:

Q. Now, that air, as it comes down through those chan- [fol. 572] nels in the front and back of the James Way machine, is that hot or cold air?

A. That is hot air, because it has just passed over the heating coils.

Q. Then, as I understand it, James passes a current of hot air down through those channels?

A. Yes, sir.

Q. Down to the bottom of the egg chamber?

A. Yes, sir.

Q. Now, are we not agreed, Dr. George, as to what function that so-called air mixer performs? Are we not substantially in agreement?

A. I think we are. I think you have admitted very nicely at the start that it was for the purpose——

Q. That is, there is no argument between us?

A. No, not at all.

Q. And the purpose of that mixer, and its function—whether it is the reason for putting in there or not—at any

rate, its function is to smooth out the air currents as they go up through the egg column?

A. Well, it is for the purpose of taking the air which comes down the side—although you are in agreement, I would just like to state it this way—the two currents of air from the front and back which, because of coming from a small section of passage must be moving at a higher velocity than the air in the egg chamber, it is to take those two streams which are coming in from each side, the four streams that are coming in from each side, the four streams that are coming up from the bottom, and destroy any high velocity which it must have to come down through that passage, so that when you go up through the machine you have that advance, such as Mr. Taggart has shown on his test.

[fol. 573] Q. That is to say, if you do not have that so-called air mixer in there, the air currents, as you come down through those channels would sweep over to the center and concentrate at the center?

A. That is my belief, yes.

Q. Now, by putting that co-called air mixer in there, you broke up that tendency for the current to mass in the center, and you spread it out and distributed it more evenly over the whole column?

A. Yes, sir.

Q. And as an additional function, that air mixer takes the cold air that is coming in through those holes and distributes that into the column of air, is that not true?

A. That is correct; that is my understanding.

Q. And the practical effect of that air mixer is not felt in the machine above and about the second or third tray; is that not so?

A. As shown by Mr. Taggart's readings, that is so.

Q. And you do not disagree with that?

A. No, I do not disagree.

Q. Now, in the Smith machine, the cold air enters above the fan, does it not?

A. It does.

Q. It is drawn into the fan?

A. Yes, sir.

Q. And the fan mixes that cold air in the stream of hot air and distributes it through the stream of hot air that is coming in over the beams, is that not true?

A. That is correct.

Q. And you, therefore, get that same distribution of cold air evenly through the stream of hot air by the fan in Smith that you get by the air mixer in the James Way?

A. As far as the——

Q. As far as distribution of the cold air is concerned?

A. As far as distribution of the cold air in the mass of hot air is concerned, yes.

[fol. 574] Q. All right; I will go on to the next one in a minute.

Now, you say that, in addition to that, that stirrer tends to distribute the current more evenly throughout the whole column; that is true, is it not?

A. That is correct, yes, sir.

Q. Now, in the Smith fans which are at the top of the corridor, we are going to find immediately below the fans a turbulent mass of air, are we not? A. We are going to determine a high velocity, moving, turbulent stream of air.

Q. And as you go down in the column that air tends to widen out, does it not?

A. It does.

Q. In the column?

A. Yes, sir.

Q. And, therefore, the speed of the air gets more uniform as it goes down in the column?

A. It gets much less, and the uniformity would be determined by taking readings. I have not done that.

Q. You would assume the fact——

A. It would get less, I will say that.

Q. And it would get more uniform, you would suppose, due to the fact that it is spread out over a great area?

A. I am not sure of the uniformity, without taking readings. It would get less, I would say.

Q. You have not any reason for disputing what I have said?

A. I can't say what you have said is right unless I have made a test.

Q. Nor what I have said is wrong; you cannot say it is wrong.

A. I can't say it is wrong nor can I say it is right.

Q. And in the operation of this James Way machine, so far as the transfer of any heat units by the air as it finishes [fol. 575] its cycle, that is, in the back part of its cycle, as

we might call it, that is, in that portion of the cycle going down from the corridors, your position with respect to the James Way machine, as to whether any heat is transferred from the eggs in the later stage of incubation is the same as your position with respect to the Smith machine?

A. No, not quite, because in the Smith machine I cannot deny—in fact, I assert that eggs in the late stages of incubation are giving heat to the eggs of the early, because that heat goes right through the mass. Now, I can't say that with regard to James.

Q. That is, if any heat units are picked up from the hot eggs in the James machine, and go on up into the fan—the thing I call a fan—those heat units, in your opinion, will be dissipated in the moisture pan, is that right?

A. Moisture, and lost through the outlet.

Q. That is, you have to assume, then, that all of the heat units and all of the air flows over the moisture pan, or else flows out of the openings, in order to reach that conclusion, have you not?

A. When you have, as in the James machine, the mixer at the bottom, which thoroughly mixes the air, any heat which you remove by any means whatsoever is going to affect the whole mass of air because it is brought to more or less uniform temperature by the stirrer.

Q. I wish you would answer my question, please. Will you read him my question?

A. I am endeavoring to answer it.

Mr. Ely: Will you read my question?

(Question read as follows:

[fol. 576] "Q. That is, you have to assume, then, that all of the heat units and all of the air flows over the moisture pan, or else flows out of the opening, in order to reach that conclusion, have you not?")

Q. You understand my question, do you?

A. No, I don't, will you read it again, please?

Q. That is to say, your position is, as I understand it, that none of the heat units from the eggs in the chamber will pass through that corridor or passageway and come back to the eggs again; is that your position?

A. That is my position; when we interpret what we mean by "heat", there is more heat discharged from the open-

ings and used up in humidification than is given out by the eggs within that incubator. That is my position.

Q. I do not see any difference in your position in that respect, with regard to the Smith machine, than I do with the James machine, Dr. Greene. Will you tell me what is the difference?

A. The difference is that in the Smith machine, as disclosed in the patent drawing, and as taught by the patent and specifications and claims, by putting the eggs in a particular arrangement, with the hottest eggs at the bottom and gradually getting into the eggs which are requiring heat, we can definitely say that heat is transferred from the eggs in the latest stages of incubation or hottest stages, to those in the earliest stage, and as I have said over and over again, without the Smith arrangement as indicated in his patent, you cannot make that statement, in my opinion. [fol. 577] Q. Then let me revise my question: Assuming, in the Smith machine, that we would put the hot eggs at the top of the column, assuming that condition, with the Smith machine, then your answer, with respect to this former question of mine, your operation would be the same in the James and in the Smith?

A. It would, yes. That is exactly my position.

Q. You do not mean to say, do you, that all of the heat units, as they come up through that egg chamber, whether given off by eggs or given off by anything else, divide and the heat units from the eggs go over and dip in the moisture pan or go out the opening, do you?

A. Oh, no.

Q. They enter the general column or stream of air?

A. That is correct.

Q. And a portion of that is taken out by the moisture pan and a portion of that goes out the opening?

A. That's right.

Q. And in the Smith machine, with eggs at the top, the same thing would happen?

A. Yes, sir.

Q. Why is it, then, that it does not make any difference, in the James Way machine, how you set your eggs, and in the Smith machine it makes such an awful lot of difference? Why is that?

A. Because in the James machine, any heat which is needed comes from the pipes, and there is no claim that

it does not. There is no claim that heat from the hottest eggs will be given up to the coldest eggs, to cut down the heat. He is not following the Smith teachings.

Q. No, no. Now let us get away from those teachings of the Smith patent. I am talking about the Smith machine.

A. Did you not say Smith machine?

[fol. 578] Q. I am talking about the Smith machine and James machine.

A. That is what I am talking about.

Q. You are talking about the teachings of Smith. Now, I am not talking about the teachings of Smith, as you understand them, or as you would try to have it put. I am talking about the Smith machine; now, if you will keep to that.

A. I thought I was keeping to it, I assure you. May I hear the question again? I am endeavoring to answer your question.

Q. I assume so.

A. Yes, sir; that's right.

(Question read as follows:

"Q. Why is it, then, that it does not make any difference, in the James Way machine, how you set your eggs, and in the Smith machine it makes such an awful lot of difference? Why is that?")

A. That is exactly the answer I was trying to give you?

The Court: He was asking about facts, not what the teachings are. What are the facts that make the difference in the results?

The Witness: In the James machine, the eggs are placed in, and the difference between the amount of heat required for the eggs and that required for evaporation and heat lost in the air, is made up by the hot water pipes, and therefore, so long as you maintain the chamber in which the eggs are placed for their incubation for the first 18 days or 17½ [fol. 579] days, the operation of this development of the embryo takes place. In the Smith machine, however, which I though- you wanted me to answer, in order to follow his teachings, the only way in which you can definitely say that the heat from the eggs in the later stages of incubation can be carried to the eggs requiring heat, will be with this

arrangement, whenever some of that heat, and much of the heat is delivered through a vent hole at the top.

I would like to point out, also, in the Smith teaching, we have the hottest eggs, from the 18th day to the 21st day, in the machine, to give up this large amount of heat to the other eggs.

Q. Now, Dr. Greene, in this answer you have kept talking about "Smith teachings", and I did not ask you about Smith teachings.

A. Well, on the Smith machine.

Q. I am talking about the Smith machine, not Smith teachings. Now, can you answer the question without going to anything that you call the Smith teachings?

A. All right; I will change, with the permission of the Court, every place where I said "Smith teachings", and make it "Smith machine", as practiced in the machines which I have seen. Does that answer your question?

Q. No, I did not ask you that. I asked you why it was that you can arrange eggs in any order that you want to, in the James Way machine, without affecting the operation; then why it is that you cannot do that in a Smith machine? [fol. 580] A. I understand your question. You can do it in a machine built by the Smith Company.

Q. You can do it in that machine that we saw in the warehouse?

A. Absolutely, you could put it in any way there.

Q. And your operation would be just the same as it is in the James Way?

A. Yes. I beg your pardon, your Honor; I misunderstood entirely the point of the question. That is, you can take a machine such as we saw in your room, or over in the room of the James exhibits; and I believe you could put the eggs in any position, put in the hatching eggs at the bottom, of course, for convenience, and I think it would work.

Q. And you could put the hatching eggs up at the top, if it were not for the matter of droppings and shells, and so forth?

A. Yes.

Q. That is, the hatching eggs are at the bottom, in Smith, so the litter, and so forth, will not fall on the other eggs?

A. Yes. I beg your pardon, Mr. Ely; I thought you meant, by "Smith machine", the machine following the patent. I am not trying to quibble with you. I really un-

derstood you to mean that; but so far as that machine is concerned, I would like to repeat it, built by the Smith Company—we will not give it a name—at least, you have exhibited, 52,000, I think it is called, and the James Company has exhibited—I believe you could put your eggs in that machine for 18 days in the so-called incubating sections, and then three days in some other section, and get hatches. That is my belief as an engineer.

[fol. 581] By the Court:

Q. What you mean by your answer is—I take it from your answer, you claim the machine does not conform to the claims?

A. What is that, sir?

Q. You claim this machine does not conform to the claims?

A. No, sir; the machine does conform to the claims as it is practiced, but a hypothetical question was asked me, if that machine had its eggs sandwiched as in James, would it work, and my answer is that it would work.

Q. I do not know as I just gather the significance of this answer, then. You mean, the patented device, the Smith device with eggs sandwiched in any order, would work?

A. The patent does not provide that at all, but the machine can be set up.

Q. My question was whether you claim that the claims do not cover the particular description of the particular machine here?

A. No, sir, in my opinion the teachings of the patent are perfectly definite.

By Mr. Ely:

Q. Let us follow his Honor's thought for a moment. Do you think anyone operating a Smith machine as I have described it, that Smith machine as I have described it, who sandwiched his eggs as you sandwich them in James, do you think he then would be infringing Claim 1 of the Smith patent?

A. Assuming that he could put the eggs in such a position——

Q. Now, wait a minute; I said, sandwiched eggs.

A. I understand, but you cannot do that in the Smith [fol. 582] machine as you built it because you have to bring

your eggs in at the top. You can turn them around upward but you cannot sandwich them as you build it.

Q. Now, that is, taking the racks out of the Smith patent, you understand these chain racks are an improvement over what was shown in the patent?

A. Yes.

Q. Suppose we used the same racks that were in the Buckeye machine, then we would get over that difficulty, would we not?

A. Yes.

Q. And that is the only reason why you say we cannot use the Smith machine with the eggs arranged in sandwiched relation?

A. That's right.

Q. Or in any relation we wanted?

A. Yes, sir.

Q. With the hatching eggs at the top, or with the hatching eggs at the bottom, or with the hatching eggs in the middle?

A. Yes.

Q. Is that right? I wish you would answer Yes, so the stenographer will get it.

A. Yes.

Q. Now, do you think, in your opinion, that a Smith machine operated as I have described, is covered by Claim 1 of the Smith patent?

A. If I am entitled to express such an opinion, I would be very glad to express it, your Honor.

Mr. Toulmin, Jr.: If your Honor please, my understanding is that the question of infringement is reserved for the Court's jurisdiction.

The Court: I think so, too.

Mr. Ely: You have asked lots of questions——

[fol. 583] The Court: If you raise an objection, I will rule on it. Many questions are asked here which might properly be objected to.

Mr. Ely: Do I understand you sustain the objection?

The Court: I think so. I do not think that is a proper question.

A. Shall I answer it?

Q. You may not answer that question. The objection is sustained by the Court.

Now, bearing in mind this arrangement that I have been talking about, that is, the Smith machine as we have it, with the eggs sandwiched, say,—I do not care how; sandwiched —would you then carry out, in the Smith machine, the process of hatching a plurality of eggs?

A. Yes.

Q. Would those eggs be arranged at different levels?

A. No.

Q. They would be at different positions in the column?

A. Oh, yes.

Q. And in that sense they would be at different levels?

A. Only because you say it that way.

Q. That is, that is one possible meaning of the term "arranging them at different levels", would be in tiers?

A. No, not here, at all; it is perfectly different.

Q. Do you think that eggs arranged in tiers are arranged at different levels?

A. Not in the Smith patent.

Q. No, I did not ask you that. I asked you whether you thought eggs arranged in different tiers, one above the [fol. 584] other, are arranged at different levels?

A. Eggs arranged in tiers in a storehouse, one above the other, are at different levels.

Q. All right; then if we want to import that meaning into my language, then you would have eggs arranged at different levels, would you not?

A. If your meaning is right.

Q. Of course, we are forgetting for the moment this particular disclosure in the patent.

A. I did not know that we were.

Q. Well, I wish you would, for the moment; and would you then have a closed chamber with restricted openings? I am still talking about this Smith arrangement that we have been talking about?

A. Yes.

Q. With restricted openings and sufficient capacity for the escape of foul air without undue loss of moisture; you would still have that?

A. I don't think the patent is responsive at all to the teachings of the specifications.

Q. You mean you do not think the claim is?

A. The claim is not descriptive or responsive to the specifications. The restriction, in my opinion, is entirely on the inlet side.

Q. You see, what I am asking about is the Smith machine with the eggs arranged as I have said.

A. Yes.

Q. I am not asking you about the patent. I am asking you about that as an ordinary matter of English language.

A. It does not have a restricted opening or outlet.

Q. For the escape of moisture?

A. For the escape of moisture.

Q. That is, it has a small opening, therefore, a small percentage of air?

A. Yes.

[fol. 585] Q. But you would not call that a restricted opening?

A. Not a restricted opening.

Q. I understand you could then apply a current of heated air to those eggs?

A. Yes, sir.

Q. Would your current of heated air be moving at sufficient velocity so as to diffuse and maintain the temperature throughout the eggs, the same?

A. If you fix it so, yes.

Q. That is, in that construction I have been speaking of?

A. Yes.

Q. Your answer is, Yes?

A. Yes.

Q. And would the air be vitalized?

A. I don't know what that means, in the patent. It is vitalizing——

Q. Well, suppose we say, life-giving, giving life to the embryo?

A. If it means that the current of air is vitalized—by what?

Q. I will refer you to your own patent for that; if you do not know what "vitalized" means, I will refer you to your own patent, No. 1,939,908, and I will call your attention to the use of the word "Vitalized" and "vitalization" in a number of places. You understand what it means in that patent? Here it is; I have it marked.

A. I have it marked here, too.

Q. You noticed that, did you?

A. Where is it, in the first column, Mr. Ely? On page 1?

Q. It is line 5. You will find it again in the second column in line 62.

A. May I see your copy, please?

Q. Yes, certainly. You will find it at line 62. You will find it over on the third page.

A. I know where the third page is. That is not line 5.

Q. No, here is line 5 over here. This is line 62. You [fol. 586] are looking at the wrong patent. I asked you to look at your own patent.

A. Oh, I beg your pardon.

Q. Here, take my copy.

A. This patent to Markey states that "the invention relates to improvements in heating systems for incubators of the general type in which power-driven means are employed to promote air mixing primarily for heating, heat distributing purposes and for air vitalization, by mixing, ventilation being"—I beg your pardon—"for air vitalization by mixing, ventilation being accomplished by introduction of fresh air at different points in the incubator chamber to facilitate the mixing of the air."

Q. Yes, I just wanted to call your attention to the use of the word "vitalized" in your own patent. You understand what it means there?

A. It states here, at line 5, "for air vitalization by mixing", and the discretion there is by definite mixing.

Q. Well, at any rate, the word is "vitalized" in both patents, whether one is by mixing or by something else?

A. No, I don't quite agree with you, because I have looked over this patent a number of times for the meaning of that "vitalized".

Mr. Toulmin, Jr.: What are you referring to as "this patent"?

The Witness: I am not referring to the Smith patent 1,262,860, and to my copy of this patent. Line 46 is what I looked at first, in the Smith patent: "It is possible to limit the openings and so conserve the moisture by reason [fol. 587] of the vitalizing effect of the power-driven current upon the body of air within the chamber."

Now, I couldn't make any sense out of that. I don't know what the "vitalizing" effect of power-driven current upon a body of air" is.

Q. But you do understand what "vitalizing" means when it is said to be the mixing, in the Markey patent?

A. Where we come to a description of use of the word, I have to look back to the specifications to see what it means.

Q. Well, you understand what it means in the Markey

patent? A. I know what "vitalizing" means, but I do not know what "vitalizing effect of power-driven current upon a body of air" is.

Q. Well, whatever difference there might be, there would not be any difference in this arrangement that I have talked about, this hypothetical arrangement of the Smith machine, and the arrangement shows in the patent, so far as that would be concerned?

A. No; that is true.

Q. Now, in this arrangement that I have talked about, would the moisture be conserved?

A. I think it would.

Q. And would the units of heat be carried from eggs in more advanced stage of incubation to those in a later stage?

A. They would not.

Q. That is to say that the order of arrangement of eggs makes all the difference between carrying units of heat from hot to cold eggs?

A. I think so.

Q. And we have gone over that time and time again, and you do not agree with me that the fact that air moves in [fol. 588] a closed cycle means that units of heat may be carried from eggs in a later stage of incubation to those in an earlier stage? You do not agree with me on that?

A. I do not agree with you on that.

Q. And you do not agree with these other authorities I have quoted to you?

A. No.

Q. And otherwise than that, we are in agreement that the hypothetical structure of the Smith patent I have been talking about would come within the language that I have just been quoting?

A. Well, there are very important things: The levels——

Q. You disagree with me on levels and also on the units of heat?

A. Yes.

Q. And other than that, you agree with me?

A. Yes; and, by the way, the restricted opening, we do not quite agree on that.

Q. We do not agree on the restricted opening; all right. Now, when was it you were at Kerr's Hatchery at Frenchtown, New Jersey?

A. August 26th, I think it was. (Referring to notes.) August 26th, 1933.

Q. And how many Smith machines did they have in that plant?

A. They told me, fourteen.

Q. What size?

A. They were called 52,000—no, they called them 50,000 capacity, because I remember multiplying fifty by fourteen to get seven hundred. I think it is what you call 52,000.

Q. Yes; that is, it is for 700,000 eggs, or 728,000 eggs, is that not so?

A. Yes, sir.

Q. And those are all compromised in fourteen machines?

A. That is right.

Q. How many machines were in operation when you were down there?

A. In August?

[fol. 589] Q. Yes.

A. There was one machine that was running full, and I think No. 2 did not have a full charge in it, and they told me at that time that No. 1 had been constantly in operation for about three years.

Q. And it was quite a sight, was it not, to see 52,000 eggs in one room being incubated at one time, something that you had never seen before, had never dreamed of, is that not right?

A. Oh, no; I dreamed of it many times, because I had seen the literature on the subject.

Q. But it was quite an impressive sight, was it not?

A. I don't want to say what I think, because there were several rotten eggs in there, Mr. Ely, that were not very impressive.

Q. It was quite a sight to get into the machine and see?

A. Yes, I think it was. I think 700,000 eggs in one plant is quite impressive.

Q. Quite an impressive sight?

A. Yes.

Q. Did you happen to see chicks coming off at the time?

A. No, I didn't. I heard the chicks squeaking, and the man who was with me at that time—not Mr. Weisel—pulled out a couple of the trays, but he could not quite find the tray from which the noise came, but there were chicks coming out at that time.

Q. But, as you say, it is quite a sight to see those chicks all coming off at the bottom of the machine; is that not so? Did you ever see it?

A. Yes, I have seen photographs of such things and they are very attractive.

Q. Did you ever stop to consider that there are at least seven to ten plants in the Unitted States using these Smith machines of the same or possibly even greater size than at [fol. 590] the Kerr plant?

A. I noticed in one of your circulars a lot of pictures of such plants.

Q. And there are numberless plants of smaller capacity, all the way from one machine up to fourteen?

A. I didn't count it; I presume that is possible.

Q. Did you stop to consider, with this 700,000 egg plant of Kerr's, how many of those small machines, such as the James Way, still air incubator, would have had to be employed to get the same egg capacity that you had in the fourteen machines at Kerr's plant? A. No, I never thought about that.

Q. Just how many would it be?

A. Well, it would be 700 divided by five, which would be about 140.

Q. More than that.

A. 700,000, and the Smith machine is 5,000, and five thousand goes into seven hundred, 140.

Q. The Smith machine is 50,000. I am talking about the whole plant.

A. 700,000 divided by 5,000.

Q. I am talking about the James Way machine before the one in suit here. I am talking about the old machine, the old still air machine?

A. I don't know the capacity of it; if you can tell me——

Q. Say it is 180 eggs.

A. Would you let me take 200?

Q. Yes.

A. I can divide it better. It would be 7,000 divided by two, which is 3,500 such units.

Q. You would have had to have 3,500 units of the old James Way type to get the same egg capacity you have in fourteen machines of the Smith type?

A. Yes.

[fol. 591] Q. And that means quite a considerable saving in labor?

A. Oh, yes, I should think so.

Q. And quite a considerable saving in the other items of plant operation, does it not?

A. I should think so.

Q. And quite a considerable saving in space?

A. Oh, yes.

Q. Did you ask Kerr if he would like to go back to the old machines?

A. No, I didn't ask Mr. Kerr that. I didn't see Mr. Kerr; nor did I ask Mr. Weisel. While we were looking at the machine, Mr. Taggart told me that previous to the installation of these large Smith machines, they had used the whole upper floor, and I think he said part of the lower floor. It was quite a large building, and I did get some idea from him that there was a great saving in space, but, of course, that is quite evident on the surface of it: The small 200 machines, of course, take up very much less space than one of these 50,000 machines, and if we built them three tiers high, you could not say that the small machines would take up 3,500 times as much floor space, but they probably would take up much more floor space than the space used there, but not in that ratio.

Q. And there would be the individual care required by each one of these smaller units which you do not have on the Smith?

A. Yes. Of course, on the smaller unit—I have never handled one: I have a sister-in-law who did—I do not think you have to give quite as much attention, possibly, as you would to the series of trays. I am not a hatchery man, so I do not know if you have to pull it out every day and cool it.

Q. Then, possibly your testimony is not helpful on [fol. 592] that point?

A. I do not think it is. That is why I cannot understand why you are asking me.

Q. You understand, in these smaller machines, they have individual heat controls in each one of those cabinets?

A. Yes.

Q. In the Smith they only have one heat control in each cabinet?

A. I beg your pardon; some of these smaller machines are built in batteries so one heat control of the main heat is all that is necessary, and you have your dampers on each unit.

Q. I guess I presume a little on your lack of knowledge of the incubator art because apparently you are not much up on the practical side?

A. Not very much.

Q. Kerr was getting along very nicely there, apparently, without any separate hatchers?

A. So far as I know, he has no separate hatchers. I don't know whether he would require one under the new Code, though, if he used thirty-five——

Q. We threshed out that matter of the Code yesterday to our perfect satisfaction. You would consider, as I understand it—pardon me; part of your practice is, I understand, to pass on meritorious inventions?

A. Yes, sir.

Q. Would you consider that the man who was responsible for that development in the incubator industry had made a meritorious invention?

A. Mr. Smith, you mean?

Q. No, I say, whoever might have been responsible for that.

A. If one man, yes, sir.

Q. And do you agree that Smith seems to have been the [fol. 593] first discoverer of ways and means of applying the art on a large scale so as to meet commercial demands?

A. I can't say that, when I consider the big machine that Cyphers made years ago, and some of the other machines.

Q. Do you understand that from Smith it was first learned how the number could be raised to many thousands with success?

A. With commercial success of the company, yes, I could understand that Smith did that.

Q. No, I am not talking about commercial success of the company. That was not what I said. What I said was, do you agree that from Smith it was first learned how the number could be raised to many thousands, with success?

A. And I said no, I don't.

Q. You do not agree with that?

A. I do not agree with that.

Q. You talked about the Cyphers incubator?

A. Yes.

Q. That, as I understand it, was originally set up in the answer in this case, and has since been withdrawn. Do you know that fact?

A. No, I do not know that fact.

Q. Do you not know, as a matter of fact, that the Cyphers incubator, when he tried to hatch thousands of eggs, that was a failure?

A. I did not know that.

Q. Do you not know that he tried to hatch eggs in superimposed layers, and in staged incubation, but he left out the forced draft of air? Did you know that?

A. No.

Q. Did you know that, because he did not combine the two steps of forced circulation of air and staged incubation, [fol. 594] that his eggs burned up in the machine and the thing was a failure?

A. I could imagine that they would.

Q. And Cyphers was one of the big incubator men of those early days, was he not?

A. As far as I could read.

Q. And he did not conceive the idea of putting together staged incubation and forced draft? He did not conceive that, did he?

A. From what you say, he did not, but I don't know that to be the fact.

Q. And that was probably why the thing was a failure?

A. Might have been.

Q. And Cyphers had plenty of money, because he was one of the big incubator manufacturers in this country?

A. I didn't realize he was. I thought he was a man up near Bethlehem.

Q. He was up at Stroudsburg, Pennsylvania, and he was the manufacturer of the Cyphers incubator.

A. I knew he became that, after.

Q. And he was one of the parties in the Cyphers litigation that has been referred to by Counsel, here, in this Circuit?

A. Yes, I think so.

Q. And he did not solve the problem of mass incubation because he did not put together staged incubation and forced draft?

A. But others had done it at the same time.

Q. Pardon me. I disagree with you on that. Where do you find, in the prior patents to which you have referred, the combination of staged incubation and forced draft?

A. A very good illustration of it.

Q. Whereabouts?

A. An excellent illustration, in my opinion.

[fol. 595] Q. What patent?

A. In the patent to Bell, 691,837, of 1902, your Honor, in which we have a forced circulation by means of a heated lamp; we have an arrangement of eggs in trays, superimposed; we have a return duct; we have the control of moisture, and the control of fresh air.

Q. Now, in the Bell patent, the only thing which makes any circulation of air is that lamp which is at the bottom, is it not?

A. A lamp, or a larger machine, as he says—I think this is the one; on page 2: "It will be understood that the filling between the inner and outer walls of the incubator may be of sawdust, cinders or other suitable material, and instead of the ordinary illuminating lamp, an oil or gasoline stove may be used, and, in fact, any preferred or particularly adapted means for heating may be employed."

Q. Any of the currents which are generated by any of those things described in the Bell patent would still be what you call gravity currents?

A. Yes, sir.

Q. And would not be created by means other than variations in temperature?

A. Would be created by variations in temperature.

Q. In other words, it is not a forced draft of air; it is a draft of air solely by convection, as it is called?

A. A forced draft is a draft produced by high pressure, and as I tried to explain in my opening remarks in this case, I have known where the hot gas method and chimneys have been substituted for mechanical fans.

Q. Yes; you are talking about the stack of a chimney such as you find in a plant?

A. Yes.

[fol. 596] Q. But you do not get a forced draft of air sufficient to circulate the air through that machine by a lamp?

A. I would not say you couldn't.

Q. You would not say you could not, or you would not say you could? I did not get your answer.

A. I believe you could.

Q. It shows there a lamp, and then the only means by which the draft would be created and carried up would be due to the heat generated by the lamp?

A. And the eggs.

Q. The heat generated by the lamp and the eggs?

A. Yes.

Q. And that would be what we would call a gravity current, what you call a gravity current of air?

A. Yes.

Q. And that was what Mr. Cyphers had; he had gravity currents of air, did he not?

A. I think he did.

Q. Yes, and the Cyphers machine was a failure. Take my word for it, or not, as you like. In fact, you have never seen the Cyphers machine on material of that type?

A. No.

Q. In the Bell patent you do not have, let us say, a fan-impelled draft of air?

A. We do not.

Q. And in that sense, we do not have a forced draft of air?

A. If that is the definition of "forced", that is right.

Q. That is, you do not have, in the Bell machine, a current created by means other than variations of temperature?

A. That is right.

Q. You do not have that?

A. We do not have that.

Q. And that phrase which I just read is one of the ele- [fol. 597] ments of Claim 1 of the Smith patent, is it not?

A. That is correct.

Q. Now, where do you find, in the Bell machine, a description of staged incubation? Show me everything that is in that patent that says anything about staged incubation.

A. In the first place, as I think is very evident there, what you say of the Cyphers patent——

Q. Now, we are not talking about the Cyphers patent. We are considering the Bell patent as a disclosure by itself.

A. Reading from page 1, line 14: "It is furthermore designed to provide for effectively ventilating the interior of the device so as to preserve the proper temperature for the unhatched eggs and also for the recently hatched chickens, and at the same time to prevent the incubator from being chilled too rapidly.

Q. Now, that is the only place, is it, in the patent, where there is any reference to what you call staged incubation?

A. From the wording, yes, sir.

Q. Might that not reasonably mean that the temperature was proper for the unhatched eggs, and then, when the chicks were hatched, the temperature would still be proper within that house?

A. It couldn't be, in a house of this size.

Q. Is it not a fair interpretation of that language, as well as the one that you have read into it?

A. It might, if you do not consider the size of the machine, which is built for great capacity, the number of thousand not being stated; a house with a corridor of superimposed eggs, and with that picture before you and these words, I took the interpretation which I did.

Q. There is nothing in the patent stating that those eggs [fol. 598] are set at different times?

A. There is nothing in the patent that states that.

Q. And it might be, from the disclosure, that all those eggs were set at once?

A. Yes.

Q. There is no clear disclosure in that patent of staged incubation?

A. Not in plain words.

Q. And it is something that you have read into the patent, possibly from the exigencies of your present situation, is that so?

A. No, I don't think it is from the exigencies. I think it is from the facts in the case.

Q. And yet you have just said there is no clear disclosure of staged incubation, and there is no clear disclosure of current of air propelled by other means than variations in temperature?

A. That is true.

Q. Do you consider that that is the best reference to the Smith patent?

A. No, I don't think it is the best.

Q. Well, now, find me another patent that you think has staged incubation and forced draft in it.

A. Well, I think Stulik.

Q. All right, let us look at Stulik. Now, in the Stulik patent——

Mr. Ely: Will your Honor look at the Stulik patent, please, because that is the thing that has been in every litigation. It has been in these cases, and every defendant says that it is the best reference, so I wish you would look at it. Have you got the Stulik patent, your Honor?

The Court: Yes. What is the number?

Mr. Ely: It is that German patent. Every defendant that comes up cites that Stulik patent.

[fol. 599] The Witness: The first one, your Honor, No. 1.

The Court: Yes, I have it.

Q. Now, in that Stulik patent, we have a sort of chimney or house, do we not? We have a sort of chimney?

A. That is right.

Q. And that chimney is open at the top, with a vent?

A. That is right.

Q. And at the bottom is a hot air generator of some kind or other, stove of some kind, is it not?

A. Yes.

Q. And hot air comes in at the bottom, does it not?

A. Yes, sir.

Q. And goes out at the top?

A. Yes, sir.

Q. Now, there is nothing to force that air through except variations in temperature?

A. That is right.

Q. Now, you set your eggs, in Stulik——

A. I beg pardon; that blows the heat from the eggs.

Q. All right. Now, in Stulik, you set your trays of eggs beginning at the bottom, do you not?

A. The earliest eggs are at the bottom, and the air circulating through the system strikes the coldest eggs first.

Q. And then goes on progressively up to the hottest eggs?

A. Yes.

Q. And then goes out at the chimney?

A. Yes.

Q. Therefore, in the Stulik patent you would never carry units of heat from the hottest eggs to the coldest eggs, would you?

A. Only in the method which you are endeavoring to read into the James machine; that way you would.

Q. Well, now, wait a minute. I asked you the disclosure in the Stulik patent. I did not ask you to trap me in any-

[fol. 600] thing. I am asking you the plain out and out question, in the Stulik patent, is there any way by which the heat from the oldest eggs can get back to the coolest eggs?

A. Yes. By return through the room from the top to the bottom.

Q. I just want to go into that because I noticed you said something like that on your direct examination. Now, the heat units as they come out of the Stulik machine, are going on up to the ceiling, are they not?

A. Yes.

Q. And they will not come down and enter in at the bottom of the chamber and until they are cold and the air will not come down until it is cold?

A. No.

Q. And, therefore, the air will not enter into the base of the Stulik machine until the heat units have been dissipated through it, is that not true?

A. Not the egg heat units; they may stay in.

Q. We are talking about units of heat from the eggs in the later stages of incubation?

A. That is what I am talking of.

Q. Any units of heat which are imparted to that air will be carried by the air to the ceiling of the room?

A. That is true.

Q. And the only way the air will get down from the ceiling of the room is when it is cooled off or chilled?

A. No.

Q. Because that is the only means by which the air is going to get down?

A. No, that is not true.

Q. How will it get down?

A. If there is forced circulation of air, air has to be sup-[fol. 601] plied to that tube, and creates a vacuum behind it, and will suck air down. That is, air does not have to be cold—it has to be warm to rise, that is true, but the air must come back and the hot air must come back.

Q. But it will lose its heat units; in other words, if we set this Sulik machine in this room today and the hot air units would rise out of the chimney, do you mean to tell me those hot air units would come back down and enter the machine?

A. Some might.

Q. But they would not?

A. Not all.

Q. They would not, any of them?

A. No, I couldn't say——

Q. That is a perfectly absurd theory of yours, is it not?

A. No.

Q. You are going to say, if you put the Stulik machine in this room, the units of heat are going to go from those hot eggs up to the ceiling, still as units of heat, and come down and go into the machine again.

A. I say individual heat units might do that.

Q. Do you agree with this statement with regard to the Stulik patent:

"The movement of motor driven heated air in Smith is unlike the movement of heated air in the German patent to Stulik, confidently cited by the respondent, where it starts at the bottom of a chamber and ascends straight up through trays of eggs of different temperatures, and goes out at the top. In Smith, after the air enters, there is no quick exit. The first requisite is a closed chamber, and from this [fol. 602] chamber no air except foul air escapes; the main body is retained in the chamber and is moved in cycles through the corridor and egg columns around and around, on and on, without any defined end. If, as in Stulik, the air entered, ascended and departed, passing the eggs but once, then manifestly, the heated air, in order to pick up heat units from warm eggs and use them in warming cool eggs, must first strike the warm eggs—those in the more advanced stage of incubation."

Do you agree with that discussion of the Stulik patent?

A. All except the latter part, and then I only differ in the fact that some heat might come back; otherwise the statement is quite clear.

Q. One or two heat units might stray back?

A. I won't say how many.

Q. As a matter of fact, there is no description of anything of that kind in the Stulik patent?

A. That is correct.

Q. And that is something you have read into the Stulik patent?

A. Yes.

Q. As a matter of fact, you do not have the forced draft of air in Stulik, do you?

A. If you define forced draft of air produced by other means than difference in temperature, you do not have it.

Q. You are using exactly the language of the claims of the Smith patent when you make that answer?

A. Yes.

Q. And you say that is not found in Stulik?

A. That is correct.

[fol. 603] Q. And you also say that the chance for the unit of heat from the hot egg in Stulik, to come back, is extremely remote, do you not?

A. I won't say how remote.

Q. It is remote, however, is not not?

A. It all depends on how large the room is and what its form, and all the other details.

Q. When you made this Stulik machine that is down at the warehouse, your people put the casing right around that Stulik machine, did they not?

A. They did two things; they tried it without and with. Yes, they put the casing around.

Q. You did not find any such casing in the teaching of the Stulik patent, did you?

A. Not in the drawings, no, sir, nor in the specifications.

Q. That was something that was added entirely out of your own head?

A. Yes.

Q. And your purpose in doing that was what?

A. To show that this machine would work to recirculate the air if built that way.

Q. If the outer casing was put on, which was entirely outside of any disclosure in the patent?

A. There is nothing in the pictures.

Q. Have you got any other good references?

A. Oh, yes.

Q. Let us have them.

A. As I stated last week, the patent to Gardner, the British Patent, of an early date, 1887, shows clearly the peculiarities, the eggs in the late stages of incubation, and also the temperatures which should be around such eggs, and clearly points out that fans or other devices could be used for circulating the air. In this patent, the staged incubation

is done in separate divisions. However, the teaching of [fol. 604] the requirements of staged incubation and the methods of bringing the heat to the eggs and removing it, is clearly shown.

Q. I do not dispute for one minute, Dr. Greene, that the charactertistics, the thermal characteristics of eggs in their various stages of incubation, was not something that Dr. Smith discovered, that physical fact; I do not dispute that for a moment, that they have known from old times, that eggs got hotter as the embryo developed. I do not dispute that for a moment. Now, in that Gardner patent, you have got a series of cabinets arranged in a row, have you not?

A. That is right.

Q. A lot of pigeon holes, you might say, large pigeon holes, possibly?

A. Yes.

Q. And in that you set trays of eggs?

A. Right.

Q. Now, each of those pigeon holes is connected by a pipe to some main duct, possibly, is it not?

A. That is correct.

Q. And that main duct has got a fan in it that is drawing the air through the chambers?

A. A fan or an inspirator.

Q. A fan or an inspirator that is drawing air from the chambers?

A. Yes.

Q. So that air, as it passes through one chamber, passes out into the duct?

A. Yes.

Q. And it will not get into any of the other chambers?

A. That is my understanding.

Q. And the eggs in various stages of incubation are set in different chambers?

A. That is right.

Q. And those chambers are maintained at different temperatures?

A. That is correct, sir.

[fol. 605] Q. Because of the characteristics of the eggs at those various stages?

A. Yes, sir.

Q. Then there will not be any heat units from the eggs in the later stages of incubation carried by that air to eggs in the earlier stages, will there?

A. Not by that means, no.

Q. Not by the means described in the Gardner patent?

A. No.

Q. And as I understand the Smith patent—and disagree with me or not, as you like—is this correct; I will put it this way; is this a correct statement of the Smith patent, that you maintain a temperature substantially uniform throughout the chamber?

A. That is the wording of it, yes, sir.

Q. And then your temperature of the air around the cold eggs is substantially the same as the temperature of the air around the hot eggs?

A. That is what the wording means.

Q. And you have in the Gardner patent, however, the temperature of the air difference on each of the different sets of eggs?

A. That is correct.

Q. And there is no fan-impelled draft of air that is going through eggs in staged incubation in a circuit?

A. In a circuit, no.

Q. And the only passage of fan-impelled air is going right through eggs in one stage of incubation and out this flue, is that not so?

A. That is correct.

Q. Have you got any other good references?

A. Now, of course, one of the oldest references in point of issue is the Meschter.

Q. Do you think that is a thing that knocks the Smith patent out? Do you think that invalidates the Smith pat-
[fol. 606] ent?

A. I think it is one of the elements which we have to consider.

Q. I asked you—what we started out with was something that would knock the Smith patent out, invalidates it?

Mr. Toulmin, Jr.: Your Honor, is not that calling for a conclusion that is reserved to the Court?

Mr. Ely: I am asking the witness to pick out a patent which, in his judgment, invalidates the Smith patent, and I do not see any object in discussing the other patents.

The Court: He says it is this patent to Meschter. Now he is cross-examining with reference to the particulars of that patent.

Q. I want to know what the force and effect of the Meschter patent is, in your judgment.

A. In my judgment, the patent to Meschter teaches very clearly staged incubation, placing the earliest eggs in a chamber quite independent from the other, moving the eggs from that chamber into a later chamber, the later chamber being one of two or more. As I pointed out, he shows in this particular embodiment three chambers in all, the first chamber and two later chambers, but he distinctly says that these could be made larger. In that later chamber there is a distinct circulation between the two chambers of the later stages, and in the sense of heat from these later stages being added to the circuit of water, I believe that heat of the eggs in the later stages does contribute to this in the bot- [fol. 607] tom chamber, although there is no air connection.

Q. That is, if there is any transfer of heat from the eggs in the later stages of incubation, it is because of the circulation of the water?

A. Yes.

Q. That is, we are not carrying the heat units by currents of air?

A. No, it is by current of water.

Q. And therefore, you are not doing what Smith did and what the James Way is doing?

A. I do not think that Smith calls for his method of changing the heat. I may be wrong. I will just read it. It says here, in Claim 1, that the heat is carried from the eggs in the more advanced stage of incubation to those in the less advanced stage for the purpose specified.

Now, I am looking at the commas of this one sentence, and I presume that this heat unit——

Q. Then it must be carried by current of air?

A. I think possibly it must be.

Q. It must be carried by current of air because there is no other way?

A. Of course, in this disclosure, it is by air, and if this is responsive to the drawing, it must mean air, and in this other case, if delivered to that early stage, it comes only from the circuit of water.

Q. That water is contained in a rather peculiarly shaped water jacket, is it not?

A. It is a water jacket surrounded on the outside with a non-conducting covering.

Q. And that water is heated by a lamp below, is it not?

A. Yes, sir.

Q. And the water, as it is heated, will rise to the top of that container, will it not?

A. Yes.

[fol. 608] Q. Just the way the water in your boiler downstairs in the cellar is hot at the top?

A. That is correct.

Q. And it will not go down again, and there is no means of circulating except as the water cools and comes back down again?

A. No, that is not so. You see, as soon as you start an up-current, since this is a body which has a fixed volume, you start an up-current and you bring back a down-current; you cannot help it. That down-current is produced by the hotter current. Now, whether the material has cooled off sufficiently enough after this starts is not in it.

Q. I noticed the same thing in the boiler downstairs, in the ordinary hot water boiler for servicing a house. If you go down and put your hand on it, you will find the hot water is at the top, and it gets colder as it goes down?

A. That is absolutely true.

Q. That is gravity, whatever movement there is in the water in that boiler is by gravity?

A. Yes, difference in weight between the two columns.

Q. And the eggs in the top of that machine will then be subjected to the influence of the hottest water?

A. Probably.

Q. And those eggs——

A. I think you would answer that better by looking at Fig. 8 of this drawing, where you will note that the hottest water rises up the side and then it returns through the middle, so you have both hot and cold water around each section.

Q. The only thing that makes the water return is the fact that it may be colder on settling to the bottom?

A. Part is hot and part is colder.

[fol. 609] Q. The eggs on the top are subject to the influence of the hottest water?

A. No, I should say to be exact that the water is being cooled by radiation as you go up and really the hottest water of all is that which—now looking at Fig. 1—the hottest water of all is that which is along the bottom of the supply channel, wherever that is; now, as a mass of water and to get this circulation and the body of water up to the top, it must be hotter than the water in the return channel otherwise it would not work.

Q. That is to say, you think the hottest water is the water which is at the bottom?

A. It must be that which is coming from the heater in your own home.

Q. And which passes along the cold eggs first?

A. And which passes along the cold eggs first.

Q. Then it will not carry any air from those eggs and carry it up to the hottest?

A. I beg your pardon.

Q. If, as you say, the water is hottest at the bottom?

A. It is not hottest at the bottom, in the supply pipe.

Q. That passes by the cold eggs first?

A. Yes, sir.

Q. These cold eggs are not giving off any heat units?

A. From that water?

Q. They are not giving off any heat units to that water?

A. To that particular water, yes.

Q. This is not a forced draft machine, is it? And the heat is not carried by a current of air except at the top, as called for by the Smith patent?

A. From the bottom, no, sir.

Q. Have you any other good patents?

A. Oh, yes.

[fol. 610] The Court: We will suspend for five minutes.

(Short recess.)

Q. Let us have another good patent?

A. Now, there are a group of patents, Mr. Ely, which with the teachings of Gardner, Stulik and McAslan as to the requirements, and I would like to add also to that, Perkins. There are a number of patents which come from the heating and ventilating art which I think are particularly pertinent in this case. I refer particularly first to the patent of Peters and Hungerford, 843909, which as I explained to the Court this morning, controls the air as to tempera-

ture, humidity and velocity and freshness, to suit the requirements of the space which it is caring for. I think that the patent to Freas.

Q. To whom?

A. Freas, which is for a device used as an incubator in biological laboratories.

Q. That is for incubating or for raising bacteria serums, and things of that kind?

A. Yes, for incubating such eggs and as I pointed out to the Court, this device of Freas——

Q. Just name them over Doctor, and I have another question.

A. The device of Freas contains an arrangement of a restricted entrance for fresh air. It has a thermostat and a supply of heat to maintain a uniform temperature and it has a fan method of producing a draft as is also the case in the Peters and Hungerford. It does not, however, reflect or disclose in the patent, any method of humidification.

Then, we come to the patent of Goldstein, which has [fol. 611] within this apparatus, a method of maintaining temperature, humidity and circulation to suit the material cared for in the device and lastly the Schwartz patent.

Q. For ordering tobacco which comes in the same way?

A. Yes, for ordering tobacco.

Q. Now, which of these various patents shows the combination of stage incubation and forced draft?

A. As a single device?

Q. Yes.

A. There is none.

Q. None shows it?

A. If you take Stulik out of the forced draft, and by forced draft, you mean from a fan, I presume.

Q. Yes, sir, what one of those patents do you consider the best reference?

A. That is a very hard thing to say, Mr. Ely.

Q. Well, if this was your lawsuit and you had to stand on one point, which patent would you pick as the one you wanted to stand on?

A. I should say the Schwartz patent, 535175, of 1895.

Q. That is the patent for ordering tobacco?

A. That is the patent called "method of an apparatus for ordering tobacco."

Q. Now, which of these patents makes any use of the Units of heat of eggs in a later stage of incubation for

bringing up eggs in the earlier stage of incubation? In other words, which of these patents utilize the heat units from the older eggs and puts them to work in assisting in the incubation of the eggs in the earlier stages?

A. In the true sense of the meaning of that expression, I do not know of any of them.

Q. And that function is performed in the Smith patent, is it not?

A. It is, yes.

[fol. 612] Q. And is it or is it not performed in the James Way?

A. It is not performed in the James Way.

Q. That is where we split?

A. Yes, if we did not split then we could say that Schwartz, if eggs were placed in his device would do exactly what Smith teaches.

Q. You have got to go to Schwartz and you have to add to Schwartz the putting of eggs in *in* stage incubation in Schwartz, which is not suggested in Schwartz?

A. It was known as the——

Q. It was not suggested in the Schwartz patent?

A. No, it was not suggested in the Schwartz patent, the Schwartz patent is used as he says here very distinctly——

Q. For the ordering of tobacco?

A. Yes, that is the important thing but I think there are some further words I would like to read if I can find them.

Q. Well, you will not find anything in there about using the units of heat in the later stage of incubation for bringing the eggs up or helping maintain the incubating temperature will you?

A. Just a moment, I am reading, excuse me. Reading from page three, line 29, "it will be manifestly obvious to those skilled in the art to which my invention appertains that still further modification as to details of construction of apparatus and arrangement of the device connected therewith may be made without departing from the spirit and scope thereof", and, "I do not wish to be understood as limiting myself to these precise arrangements of all parts of the apparatus as illustrated."

[fol. 613] Q. That is your sole basis in the Schwartz patent for the statement you made?

A. No, I think he teaches it. He does not definitely say anywhere that this could be used for egg stage incubation.

Q. Do you understand that in ordering tobacco you are dealing with living things, like the embryo in an egg?

A. No, I don't think so.

Q. And you are not dealing with a substance which at one time is endothermic and another time in the same process is exothermic?

A. I think in this machine it is exothermic throughout.

Q. There is no time tobacco is endothermic, you do not have tobacco which is endothermic and exothermic?

A. I think in this, the air being heated by the heat given off by the condensation on the leaves.

Q. The material treated is not giving off heat at one time and taking up heat at another time during the process?

A. In this device heat is being given up, I think, by the material treated and, of course, as a whole in the egg chamber you would have the same thing because there is more heat generated in the exothermic eggs than the endothermic eggs.

Q. Let us get back to the proposition of tobacco; in the ordering of tobacco you do not have a point on one side of which the tobacco is endothermic and have to have heat applied to it and on the other side of the point the tobacco becomes exothermic and give- off heat?

A. I don't know that at all, and from the reading of this patent I think that it is entirely exothermic, that is my belief. I do not even know that from definite experimentation.

[fol. 614] Q. And there was no one in the prior art, from what you said that made any suggestion about using heat from exothermic eggs to heat up the endothermic eggs?

A. No, not in those words, still it comes very near to it by saying that by having his hot air bathe the cold eggs first and then afterwards the air which has given up some of its heat bathes the warmer eggs, and keeps them cool, he is enabled to maintain within this temperature a uniform temperature and that really was what Smith was aiming for.

Q. In other words, Stulik recognized——

A. The varying characteristics in eggs in varying stages of incubation.

Q. But he did nothing as far as you can find, in the patent, to put those units of heat given off by eggs in the later stages of incubation, to work on the colder eggs?

A. Nothing in his patent ever indicated a way in which it might happen. Mr. Stulik takes a different pholosophy of his incubation from that of Smith. They both, however, are aiming for the same thing, namely the uniform temperature or substantially uniform temperature, and of course, the licensee of Smith, now knowing that can be done, is arranging the eggs that way. That is, the Smith teaching is a definite teaching which is absolutely true in my opinion, and only as Smith describes it.

Q. I understand that, Doctor, and I wish you would not get off on that track when I am asking you definite questions about something else?

A. I was talking about something else—about Mr. Stulik. [fol. 615] Q. Then, your statement is there is nowhere in the prior art anyone who has suggested using the heat which is given off by the eggs in their later stages of incubation and applying that heat to colder eggs that are in the earlier stages of incubation?

A. As far as words are concerned, that is true.

Q. And as far as structures are concerned also?

A. As far as the indication on the drawings in words, from which you can get only one meaning, we do not find it on any of the drawings.

Q. And you do not find it in the specifications of any of these prior art patents?

A. No.

Q. Let us go to the James for a minute and see if James is using heat from eggs in the later stage of incubation and applying that heat to the eggs in the early stages of incubation. Let us consider that a minute. In the James Way incubator, in the egg chamber, you have eggs sandwiched in there all the way from one day old, all the way up to 17½ days old?

A. Yes, that is correct.

Q. And you understand in the form of operation of the James Way machine, they may be kept in there from 18 to 19 days?

A. That is correct.

Q. The eggs that are in that chamber are divided between endothermic and exothermic eggs; they may not be divided

at the half way point but some of those eggs, a substantial quantity of those eggs are in the endothermic condition?

A. That is right.

Q. And a substantial quantity of them are in the exothermic condition?

A. That is right.

[fol. 616] Q. And those eggs are located in the same chamber?

A. Yes, sir.

Q. And there is a current of air playing on those eggs?

A. That is right.

Q. Then, the current of air from playing over the eggs that are in the exothermic condition, must pick up heat units from those hot eggs, must it not?

A. It must.

Q. And in passing over the eggs that are colder it must give up heat units to the colder eggs, must it not?

A. Heat units, yes, sir.

Q. And heat units that are imparted to the air from the eggs in the later stages of incubation are necessarily going to be carried to the eggs in the earlier stages of incubation?

A. Oh, no.

Q. You cannot help it, can you?

A. Yes, you can, by position. If you will let me take your Exhibit I can indicate it very nicely because you have it drawn in just the form that will help us.

Q. Have any of those you like, Professor?

A. On Exhibit 27 of the plaintiff, in the lower left hand corner we have one of the eggs in the most advanced stage. At the top ends from this column, as I recall it, about 1200 heat units are delivered from the whole column of eggs per day per thousand eggs, and this air before it returns to the stirrer, has to pass over the hot or humidifying pan, the water pan, and give up some of the active heat to vaporize the water and since an amount of the circulating air, possibly, in the Smith machine two or two and a half per cent., carries with it three times as much heat as has been given [fol. 617] off from these eggs, I think it is very evident that from this one hot egg, without considering any other, none of that heat will be returned to the column.

Q. None of that heat will go around through the circuit and come back to the egg down at the bottom?

A. Not unless you label a particular heat unit with some sort of flag.

Q. You understand this is diagrammatic?

A. Absolutely.

Q. You have exothermic eggs scattered through that column?

A. That is correct.

Q. And you have got endothermic eggs scattered throughout that column?

A. That is correct.

Q. What is going to prevent heat given off by the exothermic or hot eggs from being imparted to the endothermic eggs in the same column?

A. Nothing.

Q. That would be true of these other four arrangements?

A. Wherever the column of air strikes on exothermic egg and immediately strikes an egg in an endothermic condition, heat will be taken across.

Q. And you understand that in this particular arrangement at some point during the process, the exothermic, which is the 17½ or 18½ day egg, is going to be at the bottom of the column?

A. There may be an occasion.

Q. There will be some endothermic eggs in the column above it?

A. Yes, sir.

Q. What is to prevent air carrying heat from the exothermic to the endothermic egg above?

A. Nothing.

Q. It will do?

A. I think it will.

Q. You do carry heat from the exothermic to the [fol. 618] endothermic in the James Way?

A. When you have a definite position such as taught by Smith.

Q. I did not talk about anything taught by Smith. We are talking about the arrangement shown by James Way.

A. When it is arranged as shown in Smith, in this arrangement, you will get this effect, and when exothermic eggs are placed below endothermic eggs.

Q. And in the James Way you have exothermic eggs below endothermic eggs?

A. You will have them.

Q. And you cannot prevent them?

A. No.

Q. You cannot prevent heat being carried from the exothermic to the endothermic eggs?

A. That is true.

Q. And heat will be carried from the exothermic eggs in the James Way to the endothermic eggs?

A. At particular times.

Q. That will always happen?

A. That will not.

Q. When you have eggs sandwiched in the James Way, exothermic and endothermic eggs sandwiched in that column there in any arrangement whatever, units of heat will be carried from the exothermic to the endothermic eggs, will it not?

A. It will not.

Q. In what arrangement will that result occur?

A. In the Smith arrangement.

Q. Will it occur in the James Way?

A. It may occur when the James Way falls into the Smith arrangement.

Q. And will it not occur when the James Way is set with the eggs sandwiched, hot and cold eggs?

A. No, sir.

[fol. 619] Q. That is your testimony, is it not?

A. That is my testimony.

Q. Notwithstanding the fact that the air current is going to pick up heat from those exothermic eggs, because the eggs are hotter than the air current, and they are going to transmit heat units to the endothermic eggs because the endothermic eggs are colder than the air current, that is true.

A. The heat given up by the exothermic eggs, provided those eggs are not below the endothermic eggs will never reach the endothermic eggs but will go out through this opening.

Q. And in the James Way, any arrangement shown by them, there will always be exothermic eggs below endothermic eggs?

A. At times, yes.

Q. There always will be a time when heat is carried from exothermic to endothermic eggs, is that not so?

A. Whenever in the James Way, when a hot egg is below a cold egg, heat will be carried from the hot egg to the cold egg.

Q. There are always hot eggs below cold eggs in the James Way?

A. Some times.

Q. Isn't the answer unqualifiedly "Yes"?

A. With certain eggs, that is true.

Q. Isn't the answer "Yes", unqualifiedly?

A. It is not.

Q. Have you not in the James Way incubator, in any arrangement of sandwiched eggs, always exothermic eggs below endothermic eggs?

A. In the lower left-hand picture I have called your attention thereto, and in which you have no change in the water pan, nor have you indicated the amount of heat removed, the hot egg at the top have no cold egg at the bottom.

[fol. 620] Q. Then, you agree with me, do you not, that in any arrangement of James Way incubators, heat units will be carried from hot eggs to the cold eggs?

A. From some hot eggs to the cold eggs, not from the hot eggs to the cold eggs, no, Mr. Ely. I want you to realize that in James Way the hot eggs are not in the incubator, they are up in the separate hatcher.

Q. You must not forget that in the James Way you have eggs past the 11th day of incubation and giving off heat?

A. Yes, sir.

Q. You may not be using all the heat units given off by the eggs during the entire process, but you are using heat units given off from the 11th to the 17½ day.

A. That is true, sir.

Q. You may not utilize all the heat given off by the eggs, but you utilize some of the heat given off by the eggs?

A. You use some of that heat.

Q. That heat enters into the air column just as it enters into the air column in the Smith?

A. Yes, sir.

Q. When you first start filling it with eggs in the first 18 days of the operation, do you consider the machine in that operation is carrying heat from exothermic to the endothermic eggs?

A. In the 18 days?

Q. You understand in the Smith we start filling it with eggs and 18 days after we start the incubator going we have only eggs up to the 18 days?

A. Yes, sir.

Q. Would you say in the Smith in that condition you are utilizing heat from the exothermic eggs onto the endothermic eggs?

A. I would.

Q. With that condition, the situation in the James Way [fol. 621] is the same as the Smith?

A. Up to 18 days?

Q. Perhaps up to the 19th day, in the James Way, if they carry the process on to the 19th day?

A. Yes, sir.

Q. Do you consider that the Buckeye machines, which you saw over at the warehouse, are operating under the Smith Patent, for example, Claim 1?

A. I don't think——

Mr. Toulmin, Jr.: I object, that is calling for a conclusion as to whether there is an infringement or not, because the Buckeye machine comes within the Smith Patent, that is a question of infringement.

The Court: The question in that form may go out.

Q. The Buckeye machine was shown to us, you recall.

The Court: Ask him to describe the Buckeye machine and show the parts as compared to the Smith machine.

Q. Now, Dr. Greene, do you consider that the matter of size affects the process?

A. Size?

Q. Yes, size of the machine affects the process.

A. Well, I do think that the Smith Patent, as taught, is for a mam-oth machine; he distinctly says so.

Q. That is your reading of the specification of the Smith patent?

A. Yes, and he distinctly illustrates it in his drawing, he talks about a machine of large size, and as you pointed [fol. 622] out this morning, that in many cases this large size saves space and so forth, when it is organized on the disclosure made in this patent; I should think that size would come in.

Q. You have tied up size with what you call the man-entering corridor, have you not?

A. Yes, sir.

Q. There is not any man-entering corridor in a Buckeye machine, is there?

A. The Buckeye machine which I saw might be called a corridor, and I believe men go in there to adjust fans but not to put eggs in.

Mr. Toulmin, Jr.: We object to going into this Buckeye machine, it was not gone into on the direct examination of this witness at all and we are now going into an inquiry whether the Buckeye machine is an infringement.

Mr. Ely: You sought to make the point that the Smith is limited to a man-entering corridor.

Mr. Toulmin, Jr.: That is an arrangement between the Buckeye and you, but it has no bearing on this lawsuit, as to any interparty agreement, there is no proof in this case that the Buckeye comes in unless the Court has a decision to make on the question of infringement of the Buckeye as well as infringement of the James.

The Court: It does not appear from the design attempted by the claim, as to whether it is essential to the validity of the claim that it must or must not be a man-entering cor-[fol. 623] ridor suitable for passage by an individual.

Mr. Toulmin, Jr.: If that is their position, they have to prove that, they can put their testimony in in rebuttal and not through this witness who has not been asked about that.

The Court: I do not think we need bother with that, Mr. Ely, I think the diagrams speak for themselves.

Mr. Ely: All right, your Honor.

Q. Do you find anything in Claim One of the Smith patent, any talk about a man entering corridor there?

A. No, sir.

Q. That is a claim to a process of hatching eggs, isn't it?

A. Yes, sir.

Q. There is nothing in that claim about whether a man goes inside or not?

A. That is correct.

Q. Might that be carried out by a machine in which a door opens from the outside and which you put eggs in from the outside, just as well as a machine you put eggs in from the inside?

A. I have not looked into that to make a definite answer.

Q. You do not find that; there is nothing about a corridor in Claim One?

A. I distinctly said that.

Q. There is nothing about size in Claim One, is there?

Mr. Toulmin, Jr.: If you are going into the question of construction as claimed, I hate to object so much, but I [fol. 624] think the question of whether or not the construction is in accordance with the claim is for the Court and not for the witness. Some ambiguity of some particular statement is the only question which would be inquired into.

The Court: He can state whether there is anything in the patent about the size. Is there anything in the patent?

The Witness: There is in the patent specification, but not in claim 1, 2 or 3. In claim 5 the corridor is brought in.

Q. Is there anything in Claim 1 about tilting the eggs, tilting the egg trays?

Mr. Toulmin, Jr.: We still object to getting into the question of the claims. We think your Honor, that is a matter for the province of the Court.

Mr. Ely: I call your Honor's attention to the fact that it is one of the things of the alleged device, that James never tilts his trays and Smith tilts his trays.

Mr. Toulmin, Jr.: That is for the Court to determine.

The Court: I think it is competent in view of that inquiry. The objection is overruled.

Q. Is there anything about tilting the trays in Claim 1?

A. In the patents?

Q. In Claim 1?

A. No.

Q. Now, I understand it, or is it your understanding, that not a single element of Claim 1 is found in the opera- [fol. 625] tion of the James Way machine?

Mr. Toulmin, Jr.: Your Honor, may it be understood that my objection stands to all similar questions and the Court will grant us an exception, please.

The Court: Yes.

The Witness: May I have the question, please?

(Question repeated by the stenographer as follows: "Q. Now, I understand it, or is it your understanding, that not

a single element of claim 1 is found in the operation of the James Way machine?")

A. Yes, Claim 1 of the Smith patent, 1,262,860 calls for the method of hatching and a plurality of eggs. James does not hatch the eggs in the sense Smith uses the word throughout his patent. "To arrange them at different levels in a closed chamber", he does not do that in the sense of the Smith patent "having restricted openings of sufficient capacity for the escape of foul air without undue loss of moisture and applying a current of heated air". This said restricted opening is in the closed chamber. James does not have that. "Said current being created by means other than variations of temperature"; James does have that.

Q. Pardon me just a moment, in the sense of a current?

A. No, sir, he has no current, used in the sense of Smith, because he does not have this high velocity. You asked me this morning about the difference between 165 feet per [fol. 626] minute and 140 feet per minute and you did not wait for the answer. I have not talked with anybody about it but my opinion would be that the effect of that velocity would be felt, as pointed out in my examination.

Q. You pointed out in the James Way you had the speed of the air higher than that and had no detrimental effects as far as hatching was concerned, due to that high velocity?

A. "And of sufficient velocity to circulate, diffuse, and maintain air throughout the chamber at substantially the same temperature". The temperature throughout the James Way and, I believe in the Smith is changeable due to giving up and the receiving of heat. In the Smith machine there is a definite trend that temperature, whereas in the James there is a fluctuation back and forth. That there is much of a variation in temperature I doubt. I think in most machines the temperature is very much the same whereby the air will be vitalized", as I said I do not know what that means, I know what the word "vitalized" means but in this patent I don't understand it. "Moisture conservation", I do not think James conserves moisture, in that the heat removed by the moisture, as I recall it, is about twice as much as in the James as in the Smith per thousand eggs per day and "units of heat will be carried from the eggs in the more advanced stage to the eggs in the less advanced stage". I do not feel we have the more ad-

vanced stage, as the more advanced stage is separated and put into an independent structure and I think because of the heat being delivered through the outlet and into the water [fol. 627] pans, that we cannot say that all of the heat which is given out by the hotter eggs is given back to the colder ones, so there is nothing in my opinion that is true in Claim 1 in the James patent, outside of the closeness of the temperature.

Q. Outside of what?

A. The substantially same temperature, I do not believe in either of them there is much variation.

Q. Now, that claim distinctly does not call for a process of incubating and hatching eggs, does it?

A. No, sir, it says "the method of hatching".

Mr. Powers: May I be heard on that objection?

The Court: Certainly.

Mr. Powers: I think Counsel justified the examination a while back on the grounds that during the direct examination it had been brought out that the Smith machine had a corridor and that the James machine did not. That, of course, is a question of fact. Now, the applicability of the claim to those facts is for the Court, and I want to submit, in spite of the fact that there has been a ruling on the question, I do not believe it is quite clear that the development of those facts does not justify an examination of this witness on the claim which is essentially for the Court and a matter of argument and I think while we are on that subject it will be pertinent for me to refer to cases in this circuit, our Circuit Court of Appeals. I want to direct your attention to Kohn vs. Eimer, 265 Fed. Rep. page 902; by [fol. 628] Judge Learned Hand, who said: "We have not the slightest wish to minimize the vital importance of expert testimony in patent suits, or to suggest that we are not absolutely dependent upon it within its proper scope; but that scope is often misapprehended, as the appellant has misapprehended it here. Specifications are written to those skilled in the art, among whom judges are not. It therefore becomes necessary, when the terminology of the art is not comprehensible to a lay person, that so much of it as is used in the specifications should be translated into colloquial language; in short, that the Judge should understand what the specifications say. This is the *only permissible use of expert testimony which we recognize.* When

the judge has understood the specifications, he cannot avoid the responsibility of deciding himself all questions of infringement and anticipation, *and the testimony of experts upon these issues is inevitably a burdensome impertinence.*"

Of course, that is a specific rule, as your Honor probably knows in effect in the Southern and Eastern districts against asking the experts questions concerning the claims, the interpretation of the claims, and Judge Mayer, the late Judge Mayer, discussing that practice, in another case, in the Second Court of Appeals, Victor Talking Machine Company vs. Sonora Phonograph Corporation, 221 Fed. Rep. 677, said:

[fol. 629] "This rule was adopted in order to confine experts to explanations which would be helpful and instructive to the Court in enabling it to understand the art. Whether the patent is valid and/or infringed are questions for the court, and one of the objects of the rule was to reduce the testimony of an expert to its proper and useful limits, instead of permitting it to be an extended argument with a jurat at the end."

I submit, in view of the expression of our Court of Appeals, it is not proper for the witness to be asked whether the claim includes that or does not include that.

The Court: Let me see those questions put to the witness, in writing, the summation you had a few minutes ago.

Mr. Ely: I call your Honor's attention before you look at that, to the extensive series of questions asked the witness on direct examination on this claim, and he was asked to read the claim and give his answer as to whether they were claims, for instance, on Page 121 of the record, the witness said, am reading from page 111, as you remember, a very large number of questions were asked on direct examination as to the claims.

The Court: My theory of the ruling was based on my belief that the foundation had been laid by inquiry made on direct examination. It is very true, of course, the Court has to determine the application of the testimony of experts [fol. 630] and apply the claim or interpret the claim, that is very true, but I would think that here in this case the witness has been asked pro and con in substance, the meaning of these features of these various claims and I think that for the enlightenment of the Court, I do not know

whether it is competent as cross-examination, but for the enlightenment of the Court is ought to be permitted under these circumstances. Let us see what your question is, Mr. Ely.

(Stenographer then repeated the question as follows:

"Q. Now, that claim distinctly does not call for a process of incubating and hatching eggs, does it?

"A. No, sir, it says the method of hatching.")

The Court: I do not think it is necessary to go into the specific language of the claim because the Court can do that.

Mr. Ely: It is merely a foundation for what is to come.

Q. That is to say, in your understanding of that claim it is limited to the process of hatching eggs?

A. The patent specifications, Mr. Ely, distinctly differentiate between the two actions; he does call the early part "stages of incubation" and then he speaks of "hatching in the lower three trays".

Q. Yes.

A. And in that sense I think that this should refer to the latter part. Now, of course, since there is only one type of egg in that hatching compartment, and it is all of the same nature, exothermic, of course, the rest of it could not be read in there, but it does, to my mind, distinctly require [fol. 631] hatching, as I can see it here.

Q. That is to say, the eggs, in the Smith machine, which are hatching, in your narrow meaning of the word——

A. Yes, sir.

Q. Are the eggs which are in those lower three trays?

A. In the Smith reading of the word, as I take it, not mine.

Q. Are the eggs in those lower three trays?

A. Yes, sir.

Q. And eggs which are aboye those lower three trays are what you term as "incubating"?

A. Not what I term but what he terms it. I would like to read it to you.

Q. What do you understand to be incubating eggs?

A. What these words in this specification say, not what I say, "A series of stationary racks", I am reading from page 1, line 81, "A series of stationary racks 12 are also arranged beneath the tilting racks 10, and all of the said racks are of open construction and of the same size to per-

mit interchange of the shallow trays 13 for the eggs to be hatched." Now, a little further over he says, on page 1, line 48, "It is manifest that the temperature will remain practically the same throughout the column of eggs, but the air is impelled with sufficient velocity to carry the heat away from the eggs which happens to be in the advanced stage of incubation". He is now speaking about the egg trays in the lower 3, in the racks which are surrounded by the fabrics. Then, on page 2 he says, beginning at line 79, "It, therefore, appears that the improved apparatus and method contemplates the application of hot air circulating [fol. 632] in a column with such speed as to keep the temperature substantially uniform and so arranging the eggs that the fresh eggs are placed at one point in the column of air and held in a horizontal plane until they reach a predetermined stage of incubation and then put at a different point in the same column of air and kept in planes inclined to the horizontal, and thereafter placed at such a point in the column of air, that the forced draft of air acts to hold the eggs at a uniform temperature and to prevent them from becoming overheated, and thereafter placing the eggs into final position for the hatching operation".

Q. I have heard you read that phrase three or four times.

A. He there distinguishes between incubation and hatching, and I am not using Greene's words, but Smith's words.

Q. That is to say, it is your understanding in this language that the eggs above those lowermost three trays are not hatching?

A. I would not say my understanding, I would say Smith's understanding, as I understand his words.

Q. As you understand the disclosure of the patent, those eggs in the trays up above the lowermost three trays are not hatching according to his disclosure; then we must consider at this minute—we must consider Smith is hatching in the narrow term you have used it, Smith is hatching only the eggs that are in the lower three trays?

A. That is everything being hatched, you mean this last period, and moving the eggs down properly.

Q. And if you do not mean that, then the James Way is [fol. 633] hatching eggs?

A. No, for any meaning of "hatching" James Way is not hatching because the word "hatching" as given in the Court in testimony which I have heard, refers particularly to a particular period during which the chick has developed so

far that it begins to try to break through, and I think that Mr. Smith is speaking of that period also as the hatching period so that I think the hatching is not practiced, whatsoever, by the Smith language, or by the language as given by Dr. Hutt at all; that is, James does not practice that, he puts it in a separate construction.

Q. Unfortunately, you were not here to hear the testimony of the witness for the James Manufacturing Company that said the word "hatching" had a loose meaning?

A. I do not deny that is so, I believe it.

Q. Now, did you understand and state in accordance with the Smith patent there, when he is talking about hatching eggs, he is talking about eggs in those lower three trays only?

A. I don't know, you see, the word "hatching" in English is used loosely. We have to go to this specification to understand it, and the hatching, as he speaks of it, is the method of hatching by bringing the eggs up into this condition of hatching, by the way in which he specifies it in Claim 1.

Q. Now, those eggs that are in the lowermost trays, and which you say, in accordance with the Smith patent, are eggs which are hatching, are eggs all of one age, are they not?

A. That is correct.

Q. And also are not moved at any time or shifted in [fol. 634] column while they are undergoing the hatching process, if hatching means simply the last three days?

A. That is correct.

Q. I see you have recognized the difficulty in construing the claim in the way you would have it. Now, the claim says that the heat must be transferred from eggs in the later stage of incubation to those of the earlier stage, does it not?

A. Yes, it does.

Q. And therefore the eggs which are referred to must be in more than one stage of incubation in order for that to take place?

A. Yes, that is true.

Q. And in your connotation of the words "in different levels" that means that the eggs must be moved while this process is being carried on?

A. Yes, the complete process he speaks of.

Q. Yes, the eggs, which are hatching in your narrow definition of the words, are never moved, in that they are shifted in the column?

A. Yes, they have been moved into the position.

Q. They are not moved while they are there?

A. No.

Q. While they are undergoing this last three days, which you say is the hatching operation, they are not moved to different levels in your connotation of the words?

A. They are not moved or are any others moved, moreover these are the hottest eggs, they give off one hundred and sixty per cent. of the heat from the first 18 days, and Mr. Smith is trying to use that.

Q. Before you get me off on that point, I want you to bring this point home. The eggs which are hatching, in the narrow form of the term which you use, those eggs are all of one age?

A. Yes, sir.

[fol. 635] Q. There is, therefore, from those eggs no transfer of heat from eggs in the more advanced stage of incubation to eggs in the less advanced stage of incubation?

A. I don't know about that.

Q. If they are all of the same age, there necessarily can be no transfer of heat amongst those eggs?

A. That is true.

Q. Those eggs are not shifted in the column while in the last three trays?

A. That is true.

Q. Let us get to this matter of hotter eggs; that claim does not say the eggs in the most advanced stage of incubation, does it?

A. No.

Q. It says in the more advanced stage?

A. That is right.

Q. Do you find language similar to that in the specification of the patent?

A. Let us have that specification, please.

Q. Have you not got the specification of the Smith patent?

(Preceding questions and answers read as follows:

"Q. Let us get to this matter of hotter eggs; that claim does not say the eggs in the most advanced stage of incubation, does it?

"A. No.

"Q. It says the more advanced stage?

"A. That is right.

"Q. Do you find language similar to that in the specification of the patent?

"A. Let us have that specification, please.

"Q. Have you not got the specification of the Smith patent?")

Q. You have got the questions, have you Doctor?

A. I think so.

[fol. 636] Q. I think I can shorten your labors?

A. The specification on page one, beginning at line eight states, "the improved apparatus and method is particularly designed for extensive operations wherein a chamber of large dimensions is adopted to contain thousands of eggs in separate trays, arranged in tiers, and the method of heating is such that the heated air is adopted to the eggs in the various stages of incubation. There is a forced——"

Q. Pardon me, I did not ask you to read the whole specification of the patent. I asked you to find in the patent a phrase the same or similar to "eggs in the more advanced stage of incubation", I did not ask you to read the whole specification of the patent; I asked you to point out language in the specification of the patent that was the same or similar to that. The claim which you are reading is a——

A. I was not reading the whole claim, I was reading the one phrase. I cannot find that phrase.

The Court: I do not think it necessary to spend much time on that.

Q. Will you read, for example, the last two lines of column two, page two of the patent?

A. I am reading from page two, breaking into the sentence at the end of line 63. "As heretofore referred to, and as the eggs further advanced in incubation are contained in these lower trays——"

Q. Now, just a moment. Will you stop there for a minute. What eggs in what trays is he there talking about?

[fol. 637] A. He is talking about the trays which are in the lower part of the tilted racks and surrounded by the fabric.

Q. And those are the eggs which are from 15 to 16 days of age?

A. That is right.

Q. And the language of the patent where it says "eggs further advanced in incubation", refers to the eggs from 15 to 18 days of age, is not that so?

A. I am not sure of that.

Q. At that point it is——

A. If this statement which you make is right, your answer is right.

The Court: Why do you say that does not apply to those in the last three days?

Mr. Ely: Well, your Honor, I say the language of the claim says "the eggs in the more advanced stage of incubation" and they are reading that language as "eggs in the most advanced stage" and I am calling your Honor's attention to the fact that the only point at which the phrase "more advanced stage" or "similar advanced stage" refers to eggs 15 to 18 days old, which are exactly of the age of eggs in the James Way machine.

The Court: Why does that language limit it to those last three days period rather than to the eggs from 17½ to 21 days?

Mr. Ely: It does not make any difference. The language of the claim is broad enough to cover a more advanced stage. The language does not say "the most advanced stage in the incubation".

The Court: I understood you to say it applied to the [fol. 638] James machine because it applied to the last stage or 17½ to 21 days. I do not think we ought to pursue this examination at unnecessary lengths. I think most of this is for the Court, unless there is some question to be brought up in cross examination. The construction has to be placed on the claim by the Court. Now, of course, what my theory was was that this door had been opened by the examination already had.

Mr. Ely: I will not pursue that question further if I have made the point clear.

Q. I understand you to say in the James Way incubator you do not have a restricted opening leading from the egg chamber?

A. I said, or should have said that we do not have a closed chamber having a restricted opening of such capac-

ity for the escape of foul air without undue loss of moisture, that is, I stated that the closed chamber does not have the restrcted opening in it.

Q. Now, in the James Way incubator, the opening for the discharge of foul air is in the upper left-hand corner of the machine, is it not?

A. I would like to mark this "A" (Referring to Plaintiff's Exhibit No. 14).

Q. "A" on Plaintiff's Exhibit 14?

A. 14, at the upper left-hand corner.

Q. Now, the air from the egg chamber passes up through openings at the top and bottom of the fan housing, so-called, does it not?

A. That, it does.

Q. Then, that air passes through the fan housing and [fol. 639] part of it comes through "A"?

A. That is correct.

Q. And therefore the foul air from the egg chamber, whatever portion of the foul air which is exhausted from the machine, comes from the egg chamber and passes through the casing and out through the opening "A".

A. That is correct, just as I leave this building and go out the front door, but the front door is not part of this room.

Q. However, the front door is a means for your getting out of the building?

A. Yes, sir.

Q. Your hole "A" is the means for getting foul air out that is in the egg chamber?

A. That is correct, and is not in the egg chamber, and is a different pressure, as pointed out the opening is in a super-atmospheric region and the egg chamber is a sub-atmospheric region, and you cannot have two regions in the same chamber.

Q. And speaking of the James Way machine, that opening "A" performs the same function as the opening in the Smith machine, in that it lets out foul air from the egg chamber, to get it out of the cabinet?

A. Just as the same way as this door serves the same function as the front door of this building, but the front door is not in this room.

Q. That opening in the James Way incubator performs the same function as the opening in the Smith because they both let foul air out.

A. It is open, which serves to let foul air out, as the front door does to allow persons to get in and out, they cannot get in and out without going through that front door; it serves the purpose of letting people go through.

[fol. 640] Q. And this serves the purpose of letting a certain amount of foul air out?

A. Yes, sir.

Q. And equally to the matter of conservation of moisture in the James Way machine——

A. Yes, sir.

Q. We had quite an illuminating discussion about that yesterday; you were not here but I want to know if you subscribe to what some of the James Way witnesses said yesterday, as a matter of fact the matter of moisture conservation is a mattter of how much air goes through the machine because the air, as it goes through the machine, will carry moisture out?

A. That is not true.

Q. Will not the air, as it goes through the machine, carry moisture out of the machine?

A. It will.

Q. And if you reduce the amount of air going out of the machine, will you not reduce the amount of moisture going out of the machine?

A. No, that is not true. If you went out of the door with your associates, you might carry much more money than I have in my pocket, one man might carry five times more money. We have to consider the quantity and condition of that air.

Q. That is to say, moisture is diffused through the air?

A Yes, sir.

Q. It is eventually diffused through the air in this arrangement?

A. Yes, sir.

Q. And the less air goes out of the machine the less percentage of moisture will go out of the machine?

A. In that machine, yes, sir.

Q. I think we have already discussed this matter of heat transfer probably ad nauseum, so I will not go into [fol. 641] that any more. Now, would you say that the James Way incubator has a forced current of air?

A. It depends on how you define the word "forced".

Q. That is to say——

A. It is a current of air which is moved. It is moved by an inefficient impeller. There is 500 cubic feet, according to Mr. Taggart, approximately that goes through there per hour, and it is passing through there by two instrumentalities, the impeller at the top and the stirrer, which straightens out the discharge.

Q. And it is a forced current of air in that it is a current created by means other than gravity?

A. If you define a forced current that way, yes; I would call it a circuit, if you do not mind, because a current has a particular connotation in this case.

Q. The only difference, as I understand it, between, you, yourself and myself on that matter is whether that current of air is pulled through the egg incubator or whether it is forced through the eggs from a pressure behind, is that right?

A. I do not see how there can be any difference in opinion if we determine on what is an induced draft as, I think, Mr. Taggart mentioned in his examination. I may be wrong about this, but according to the Buffalo Forge Company Fan Book, which you showed me this morning—I have the old edition of that, and it very nicely says, in agreement with what I have said, that we speak normally of an induced draft when we have a sub-atmospheric condition and where the fan sucks the substance and we have a forced draft when we have a super-atmospheric condition or where the fan is pushing. Now, there is always a flow [fol. 642] when there is a difference in pressure and pressure difference is the thing that causes the flow, but in one of these machines we do have this so-called flow due to induced draft and in the other machine a flow due to the so-called forced draft. In one there was a pressure above atmosphere, not very great, and in the other one, a pressure below atmosphere.

Q. And that flow of air is produced by a power instrumentality, whether you call it a fan or do not call it a fan, is that not so, and whether that thing in the James Way incubator is a fan or not, in the strict definition of the word, it nevertheless creates that current of air through the machines, does it not?

A. Yes, you distinctly measure that with the suction around the eye of the impeller.

Q. That is to say, it does the same thing as in the Smith?

A. If by the same thing, you mean——

Q. It produces a current of air.

A. It produces motion of air.

Q. Now, in the James Way incubator, in the egg chamber the air is moving substantially as shown in Mr. Taggart's chart, is it not?

A. We will assume that.

Q. There was not any point, or, have you been able to observe any point in that air movement when we get above the first or second tray, say, have you been able to observe any point in which the air is moving first in one direction and then in the other, that is, fluctuating?

A. No, because, if there were such motion, I am not saying there were such motion, his anemometer would read [fol. 643] back and forward, and the result would be the net effect.

Q. Now, it may be that the differences in reading which he found due to the very thing you mentioned, namely the up and down motion?

A. I do not say it is, but it might be that; an anemometer is a machine, which if you blow air one way, it turns to the right hand and if you blow the other way, it turns to the left-hand. If during the minute there were net changes up and down, you would interrogate the net effect during that minute.

Q. You have had an anemometer in the James Way?

A. Yes, but I never noticed that.

Q. As far as you were able to determine the air was moving in a continuous movement through the machine?

A. A continuous but——

Q. It might be changed in one lane?

A. It might be changed as Mr. Taggart's reading showed. If you take anemometer readings, you will find a decrease and increase which means there must be a swelling out of that lane or strata and a closing up in the interim; that can only occur if there is a fluctuation or cross motion set up.

Q. You would not expect to find in the Smith machine a change in the movement of air?

A. Only because in the Smith machine the eggs fill up the large space in large numbers, but in general it even ought to be the same.

Q. This increase in speed, we talked about, in the upper corner of the James Way machine, was due to the fact

the current of air was going to those two openings, one at one side and one at the other, into the fan chamber?

A. Into the impeller eye.

[fol. 644] Q. I beg your pardon, into the impeller eye, and as I understand it, in most currents of air there is turbulence, is not that so, in most currents of air there is turbulence—any currents of air that are appreciable?

A. I think so, I think most of the testimony shows there was a certain amount of turbulence throughout the chamber.

Q. That would be true in both the Smith and James?

A. I think that would be true in the corridor of the James, where you are deflecting a large amount of air into a larger area, not so much after you turn the corner and go up, because there are not so many eggs as in the Smith.

Q. If there is any turbulence, it is possibly a little more turbulent in the James than in the Smith?

A. No, in the James, because we do not have the high velocity, and in low velocity it would persist longer than in high velocity.

Q. When you get air moving above critical velocity you will always find turbulence?

A. Yes, sir.

Q. And critical velocity is much lower than the velocity we have in either the Smith or James?

A. I have not figured it, the complete figure.

Q. There is no difference in the turbulence, except some slight degree?

A. Some arrangement of traps and organization of parts.

Q. Just one or two questions, Dr. Greene. I noted, when you were making your tests down at the warehouse, at the James Way warehouse, the other day, that when the ma-

[fol. 645] chine was filled with smoke and you wanted to clear the machine out, you opened the door and the smoke blew all out; that is right, is it not?

A. Yes, sir.

Mr. Ely: That is all, your Honor.

The Court: If you have any further inspection of this machine, you will have to have some examination, I suppose, following that?

Mr. Toulmin, Jr.: Yes.

The Court: I think we might as well suspend at this time.

Mr. Toulmin, Jr.: When does your Honor suggest we might have this inspection?

The Court: Mr. Taggart and Dr. Greene can go there, can they not?

Mr. Toulmin, Jr.: They can go there tonight; so they can get away.

Mr. Ely: What do you want to do? I did not hear.

Mr. Toulmin, Jr.: Go over and see the Smith machine with our nice 47,000 eggs, or whatever it is, and you can take Taggart along, and we will take Dr. Greene, and we can, the four of us, go in there and settle between these people exactly what the speed of air is between that and the Smith machine.

Mr. Ely: I do not think it makes enough difference, but if you want to, go ahead.

Mr. Toulmin, Jr.: You thought there was enough difference at Frenchtown.

The Court: What kind of fan?

Mr. Toulmin, Jr.: We have the same kind of fan that [fol. 646] was in the machine—we will call Mr. Corey, who has had the machine ever since he bought it three years or six years. I have Mr. Corey right here; I can call him and put him on.

Mr. Ely: I understand that these fans that are in that machine of yours are standard Smith fans that were used in the machine that was put out at the time that that machine was put out.

Mr. Toulmin, Jr.: They are the fans that came with the machine.

The Court: The old fans?

Mr. Toulmin, Jr.: The old fans, that is right.

Mr. Ely: The old fan goes up, as I understand it, to this year.

The Court: I mean, the earlier fan.

Mr. Ely: Well, it is earlier than January of this year.

Mr. Toulmin, Jr.: Yes; it is the fan which has been used for years and years.

The Court: You have spoken of two types of fans.

Mr. Toulmin, Jr.: This is the so-called old type of fan.

Mr. Ely: The fan which has been used the last 20 years, or 15 years.

The Court: You can make your arrangements about that, probably. We will adjourn until tomorrow morning at 10:00 o'cloock.

(Proceedings adjourned until tomorrow morning, February 9, 1934, 10:00 o'clock.)

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[fol. 647] Redirect examination.

By Mr. Toulmin, Jr.:

Q. Dr. Greene, last evening, at eight o'clock, we went to the store-room of the James Company where the Smith machine, produced by the James Company, was located, did we not?

A. We did.

Q. You attended that meeting and the subsequent tests?

A. I did.

Q. Did Mr. Shodron attend it?

A. Mr. Shodron attended

Q. And Messrs. Ely, Taggart and McConnaughey?

A. Yes, sir.

Q. And this gentleman whose name I do not know, the engineer.

Mr. Ely: Mr. Madison.

Q. Who went in and took the tests inside the machine?

A. Well, Mr. Shodron and I went in and Mr. Taggart was there all the time we were there and Mr. Ely came in occasionally.

Q. And I came in occasionally?

A. Yes, sir.

Q. Was the machine of Smith filled with eggs?

A. It was filled with a number of eggs which we did not count exactly, but they appeared, all trays appeared to be filled. There was some comment made that the trays were not as closely packed as Smith, in his practice, packs them. This, of course, would give a little more air space, but they were substantially filled, and when we went in there, your Honor, there was a cellophane or isinglass arrangement in an extra curtain on one side, which was about the fourth clear space from the back. We then opened the

[fol. 648] curtain by sliding it along on each side so Mr. Taggart could see all the trays were substantially filled with eggs, and when we got through, on the right-hand side, looking into the machine, the isinglass appeared to be between the fourth and fifth tiers of eggs, and it was at that place we made our test. That just happened to be a place at which it was done; any place would have done; but it was at that place we made the tests, after bringing the curtains back into their normal working condition.

Q. What is the capacity of this machine that was filled with eggs?

A. It is a so-called 52,000 machine. I figured the egg capacity at 144 eggs per tray, which becomes 47,000. Mr. Taggart, in his testimony, regarding a similar machine, said it might be between—I think he said, forty-seven and fifty-two thousand. The normal size, the name of it is a 52,000 machine.

Mr. Toulmin: I think it is agreed between Mr. Ely and myself we had 47,000 eggs over there.

Mr. Ely: It is a 47,000 machine you had over there.

Mr. Toulmin, Jr.: It is also agreed it is a standard Smith machine, is that correct, Mr. Ely?

Mr. Ely: Yes.

Q. Dr. Greene, did you offer to make any other tests for these gentlemen or offer that they could make tests they pleased when you were over there?

A. Yes, after we made the test at a point practically one [fol. 649] and a half trays from the top of the tray column, and another one about one and a half trays from the bottom of the column, should the trays be placed in a horizontal position, we asked if they wanted any more and they said, "It is your test, whatever you want to do."

Q. Did you make any test as to the amount of linear feet of air being delivered by those fans in there?

A. The only way in which the velocity, which was obtained from any tests in the vertical passage, could be determined, would be to determine, as well as you could with instruments available the discharge from the fan, so, after making the tests in the vertical passageway, we made measurements on the velocity of discharge from the fan by putting the anemometer near the outlet, probably an inch and a half away, and in three of these machines we

traversed the anemometer back and forth to get the average reading; in another one of the machines we took three different readings and averaged them. In addition, when we entered the cabinet, each one of the fans was dropped down so it could be examined and Mr. Taggart and Mr. Shodron both looked at the number on the fan, which corresponded to the manufacturer's numbers used by the Smith machine, and then we put the machines in the operating position and determined the revolutions. In most of this work, Mr. Taggart held the watch and he fixed it so we could see it and then the ticometer, not the ticometer or anemometer was observed by Mr. Shodron and Mr. Taggart and I think that there was agreement on all sides that we were attempting to get correct readings. There was no objec- [fol. 650] tion made to any entry that was made and there was no discussion about correctness or incorrectness. On fan No. 2, from the front, knowing that was going at a higher speed than others, when we got one particular reading by traversing, we realized there must have been something the matter and for that one we took these individual readings to average them up.

Q. The individual readings of other fans——

A. I beg your pardon.

Q. The individual readings of this one particular fan.

A. Instead of using the traversing number which was low and we all realized something was the matter; we took individual readings and averaged those. We endeavored to space the anemometer so that the average reading might be considered the average result of velocity.

Q. And what result did you get as to the average linear feet delivered by the fans in that machine?

A. The readings of the anemometer, when corrected by the calibration curve, gave for the average of the four fans 749 feet per minute.

Q. Now, what do you mean by the correction for the calibration curve? Explain that to the Court in connection with an anemometer and why you have to do that.

A. Your Honor, the anemometer which we used is of a small size, which you inquired about during the testimony of Mr. Taggart. I believe you asked if there were not smaller anemometers, when you saw the ones we used, and this is a small anemometer bought so that it could be in-

troduced and shifted along the opening between the trays [fol. 651] in that passageway of the Smith Patent without difficulty. The larger machine, the larger anemometer would have to be placed in position and taken out and moved by hand. This, we thought, would be used this way. We planned to move it this way and traverse the section and get the average. Mr. Taggart did not think that was the proper thing to do so we put this device two or three inches from the front, near the center of the egg chamber, and at the back wall. In all anemometers you have air passing through all inclined veins. Due to the friction of the machine, the bearings and little gears, the passage affected is larger at low speeds than at high speeds so the manufacturer or the user, and, of course, it should be done, the user should calibratae his machine, if he is equipped to do so, and he gets a calibration sheet. In this one——

Q. Where does he get that calibration sheet from?

A. The calibration sheet comes from the Taylor Instrument Company, Rochester, who makes the anemometer, and this is for anemometer 2127, which is the one before the Court, and the statement is that at 200 feet per minute plus 31 is the correction which should be added to the reading of the anemometer to get the correct speed. At 300 feet it is plus 22; at 400 feet it is plus 14; at 500 feet per minute it is plus 6; at 600 feet it is minus 2; at 700 feet it is minus 10; at 800 feet it is minus 18; at 900 feet it is minus 26 and 1,000 feet per minute it is minus 34. This calibration sheet runs, therefore, from 200 feet per minute reading on the anemometer to 1,000 feet, and at the bot- [fol. 652] tom, the instructions say where the plus sign is used that must be added to the reading of the anemometer and when the minus sign is used it must be deducted.

The Court: What do you say is the cause of that difference?

The Witness: It is due, primarily, your Honor, to the fact that there is a slip in the air going across those vanes; also there is a certain amount of friction if you take, for instance, the air turning the propeller, the airplane does not move as fast as the wind moves through the propeller and there is a certain amount of slip over those blades in this machine. You are trying to get rid of all friction so the air will move without any slip but since there is a slip,

and the air has to move over there with energy to move this, therefore, the effect of friction gives you a calibration curve which has to be used. Now, we have brought the point given here——

Q. What do you mean by the point given here?

A. We have brought the result, the point given on the chart of the Taylor Company.

Q. Your correction chart?

A. The correction chart, on cross-section paper, to enable you to get the correction for intermediate points between the hundreds.

The Court: I do not think it is necessary to go into that. I do not think there is a question here of calibration differ- [fol. 653] ences. It is interesting and valuable information but at the same time it is not helpful.

Mr. Toulmin, Jr.: I agree with the Court.

Mr. Ely: That is near enough.

Mr. Toulmin: That is all on that question. Let us go to the next one.

The Court: It makes too big a record.

Mr. Toulmin, Jr.: Yes, I want to get through with this. If we can agree on things, it is much better.

Q. Now, Dr. Greene, what result did you get in your readings in the egg column of the Smith machine that was tested last night with the eggs in it, over in the warehouse?

The Court: I understood you first to say you made the tests only at the fourth layer.

A. We made the test at two layers, one and a half from the top and then went one and a half from the bottom of the tilting egg column.

The Court: You mean trays?

A. Yes, one and a half trays from the bottom.

The Court: What did you mean by saying about the middle?

The Witness: That is in height. Now, in going in between the trays we took one reading near the curtain, one near the [fol. 654] rear wall and a third one half way between the wall and curtain. I can show on the——

Q. If you will take Exhibit 11-A and point out to the Court the different transverse and vertical positions.

A. Your Honor, we went—I will mark about one and one-half trays from the top, near the curtain near the middle and near the wall and then we went to about one and one-half trays from the bottom of the tilting column and did the same thing.

Q. And the purpose of that, Dr. Greene, was to get an average, is that correct?

A. That is correct.

Q. Read to the Court, briefly, the figures you got at the several points so that we will have a record of them.

A. In the upper portion near the front we got 152 feet per minute; in the middle position at this height we got 150 feet per minute, and all the way in 159 feet per minute. The average of those three is 153.7 feet per minute. We then went to a point near the bottom of the egg column and made three determinations, getting 85 feet per minute near the curtain; 153 feet per minute near the middle of the egg column and 154 feet per minute at the back; the average of these three is 130.7 feet per minute linear speed. The average of the two averages is 142.2 feet per minute of linear speed of air in the passageway between the third and fourth egg columns.

Q. And that is on the basis of 749 linear feet per minute, coming from the fan, is that correct?

[fol. 655] A. Yes. Might I correct that; it is the fourth and fifth egg columns, not the third and fourth.

Q. And that is on the basis of that Smith machine having 749 linear feet delivered from the fans?

A. Yes, sir.

The Court: And allowing for calibration.

The Witness: Allowing for calibration curves; those are all corrected.

Q. It is the customary practice to calibrate these instruments, is it not?

A. Yes, indeed.

Q. Now, Dr. Greene, you remember Mr. Taggart's testimony on Plaintiff's Exhibits A, B and C?

A. Yes, sir.

Q. You further remember that he testified that there were from forty-seven to fifty-two thousand eggs in the machine

and that was a 1200 linear feet per minute air delivery in that particular machine, that he testified?

A. Yes, sir.

Q. What is the average speed indicated on Exhibit 11-A, B and C, that Mr. Taggart got in the egg column?

A. As I remember the average of these various speeds, taking them in the tilting egg trays, it comes to 73 feet per minute.

Q. Now, have you made a calculation to bring the performance of the Smith machine, we saw last night, to the same comparable basis to Exhibit 11-A, B and C, by figuring the 1200 feet per minute in the Smith machine the defendant has produced, instead of 749 linear feet?

A. I have.

[fol. 656] Q. So there will be a comparsion between Exhibit 11-A, B and C and the tests you made last night?

A. I have made such calculations.

Mr. Ely: I do not see why we need to go into that. We went over there last night and they get a test, I do not see that it is necessary.

Mr. Toulmin, Jr.: This is vital to our interests to show this machine——

The Court: He should be permitted to show that if that was the basis of Mr. Taggart's testimony that the fan was 1200 feet.

Mr. Toulmin, Jr.: The Court will find it at page 312 of the record.

The Court: The factor is what stage of incubation these eggs were in.

Mr. Toulmin, Jr.: There is no point between the parties as to the stage of incubation.

Mr. Ely: I do not think the temperature of the eggs makes a bit of different in the speed of air currents, it is so very slight it is very negligible.

Q. Proceed.

A. I made such calculation to get a ratio and my result comes out 228 feet per minute were the fan delivering air at a speed of 1200 feet per minute.

Q. That is, if the test with eggs in the Taggart Exhibit 11-A, B and C had been properly conducted, from your point of view, the result, instead of being 73 feet per minute, in the egg column, should have been 228 feet, is that correct?

[fol. 657] A. From my figures that is the way it comes out.

Q. Is that in harmony with your statement to the Court as to the physical condition necessitating such a condition when you put eggs in the path of air?

A. Yes, it is 3.11 times the average, and I said it was three or four, I believe.

Q. Are these figures on this piece of paper correct, according to your check?

A. They are.

Mr. Toulmin, Jr.: Defendants' counsel then offered in evidence a sheet of paper containing comparative figures between Plaintiff's Exhibit 11-A, B and C, and the Smith machine produced in Defendants' warehouse and it was admitted as Defendants' Exhibit No. 75.

Q. Dr. Greene, yesterday there was considerable cross-examination of you on the question of the Smith machine being a pressure machine in the egg chamber, and the James machine being a suction machine. You recall that examination?

A. I do.

Q. Questions were asked you as to the elevation of the respective machines changing the pressure and suction conditions, is that correct?

A. That is correct.

Q. And you were asked about lifting them, say, two feet off the floor?

A. Yes.

Q. I want to know from you as to the Smith machine, whether, if you change its elevation, it makes any difference as to its being a pressure machine. That is, do you change it from a pressure machine to a suction machine by chang-
[fol. 658] ing its elevation?

A. Oh, no. The machine is always working relative to the atmosphere which is around it, and in order to get air out at a velocity of 160 feet per minute, as Mr. Taggart says in 11-A into an atmosphere which is also bringing air into the suction chamber directly over the fan at 180 feet per minute, you must have pressure of the atmosphere in this machine throughout the whole egg tray.

Q. And as to that Smith machine, would it operate, unless it is a pressure machine, irrespective of its elevation?

A. Oh, no, it would have to be a pressure machine.

Q. Now, as to the James machine, some question was raised here as to whether the James machine would be changed from being a suction machine by changing its elevation; is that correct, that you would change it?

A. It is not correct that you would change it. It would still stay a sub-atmospheric machine, for the simple reason that we have in the base around the stirrer, a place connected to the atmosphere which is probably a little bit below atmosphere, and since the atmosphere is the thing which fixes that pressure within, we must have sub-atmospheric pressure.

The tests made before the Court in the storeroom indicated very clearly that the Smith machine was a pressure machine, and if we put it on top of that building, the same thing would be seen; and the James Way was a suction machine, and we would put that on the roof or down in the cellar and the pressure within the device would be below the atmosphere at that point.

Q. And would the James machine operate as it is now [fol. 659] operating if it was changed from a suction to a pressure machine?

A. No, it could not operate as a pressure machine.

Q. It must inherently be a suction machine, is that correct?

A. Absolutely.

Q. Now, let us go to another point. There was a long cross examination about these heat units. The first question I want to ask you is whether it makes any difference to the egg whether the heat unit that is being applied to it comes from another egg or from a hot water pipe?

A. A heat unit is an amount of energy.

Q. It is a heat unit?

A. It is a heat unit, and whether it comes from a man, or a piece of coal, or petroleum, or gasoline, or an egg, or a hot water pipe, it is a heat unit.

Q. Dr. Smith, in his patent, as I understand it—and I want to verify this, yes or no—by arranging his hottest eggs at the bottom of the column, as explained in his patent, is doing so for the purpose of taking advantage of the egg heat, to add that to the artificial heat, in order to heat the eggs above the hottest eggs, that is, the cooler eggs.

A. That is correct.

Q. And you stated in your cross-examination that if he reversed the position of the eggs in the Smith Patent, he would not get advantage of the egg heat being transmitted to the cold eggs, and the egg heat would go out the outlet openings.

A. That is correct.

The Court: He does not distinguish between egg heat and any other heat.

Mr. Toulmin, Jr.: Yes, that is right.

[fol. 660] The Court: He means the amount of the egg heat that goes out.

Mr. Toulmin, Jr.: I was asking as to the fact of the heat going out. Now I will ask as to the amount.

Q. Now, Dr. Greene, you further stated, in connection with the Smith machine, if it was arranged in this theoretical fashion of having hot eggs at the top instead of at the bottom, that the amount of heat that would make its exit under such theoretical conditions would be greater than the contribution of egg heat to the total sum of heat; is that correct? If not, correct it.

A. I would have to get my figures there. I have an exhibit already prepared which gives those figures, which is in evidence. If I could use that, I think it would——

Q. It is 51, I think.

Mr. Ely: We do not dispute that there is more heat given out than comes from the eggs. We do not dispute that.

Mr. Toulmin, Jr.: All right, let us proceed then.

Mr. Toulmin, Sr.: There is no answer to the last question.

Mr. Toulmin, Jr.: Mr. Ely has admitted it. Let me finish this.

Q. Now, in view of the fact that Mr. Ely has admitted that there is more egg heat goes out, in that theoretical arrangement, from the Smith machine then——

[fol. 661] Mr. Ely: I beg your pardon.

Q. More total heat.

Mr. Ely: I beg your pardon. I did not say that.

Mr. Toulmin, Jr.: Just let me reverse it.

Q. In view of the fact that Mr. Ely has stated that the total amount of heat making its exit from the Smith machine when the eggs are reversed in position——

Mr. Ely: In any position.

Q. —is greater than the amount of heat contributed by the eggs; what would you say as to that theoretical machine practicing the teachings of the Smith Patent?

Mr. Ely: Just a minute. My statement was that, in any arrangement in the Smith machine, more heat goes out of the machine from one source or another than is added by the eggs.

Q. Now, will you answer my question, Dr. Greene?

The Court: Of course, you admit that it is applicable so far as the top layer is concerned.

Mr. Ely: And the same thing occurs as to the hot layers at the bottom.

The Court: I say, you admit as to the heat from the top layers?

[fol. 662] Mr. Ely: My admission was that in either arrangement, you are bound to have more heat go out than given up by the eggs; otherwise your machine would burn up, eventually.

Q. Now, Dr. Greene, that is not true when you practice the Smith invention as taught in the specification of the Smith Patent, is that correct?

A. That is correct.

Q. Now, in the James machine, am I correct in understanding your position to be that the amount of heat contributed by eggs in the James machine is less than the total amount of heat that is discharged from the outlet openings?

A. That is correct.

Cross-examination.

By Mr. Ely:

Q. That is, the difference is between tweedledee and tweedledum; you say less heat is given up by the eggs in both machines than is discharged from various sources.

A. I said that, in the Smith machine, I would have to look at my exhibit to make sure of that answer. In the

James machine, I distinctly said that more heat—I assented to the statement that more heat was delivered through the openings than was received from the egg column.

Q. Well, I know, but it is just the difference of tweedledee and tweedledum; if more heat is delivered through the openings than is given out by the eggs, then less heat is given out by the eggs than is delivered from the opening, and it is just the difference of which way you put it; there [fol. 663] is no difference at all; that is so, is it not?

A. That is, if more is delivered than that which is given, then that which is given is less than that which is delivered.

Q. Exactly so.

A. Sure.

Q. And you said one way was Smith and the other way was the James Way?

A. Yes; same thing.

Q. So there is not a particle of difference?

A. The statement is dead true.

Q. And it applies to both machines equally?

A. I would not say equally, because in the Smith machine you have this last big amount of heat down in the bottom, which is 180 per cent more than the first 18 days; also you have to take care of the moisture.

Q. I understand it is a matter of degree between the two?

A. No, it is a matter of the practice of the patent. Mr. Smith calls for everything——

Q. All right; in both machines, we will assume, and everybody agrees, that more heat goes out of both machines than is added to the machines by heat of the eggs, and we both agree on that, do we not?

Mr. Toulmin, Jr.: That question is confusing, because you say "both machines".

The Court: He can answer; he can say whether that is true.

Mr. Toulmin, Jr.: A distinction ought to be drawn between the Smith machines and the theoretical machine.

The Court: He may state if he does distinguish between that machine and the patent. Is that true, that there is [fol. 664] more heat given out than the accumulated heat from the eggs? That is the question, I suppose.

The Witness: I would have to look at my figures.

The Court: If it comes from that source or is supplied only from the heat of the eggs——

The Witness: Your Honor, my figures are in that Exhibit, and my trouble is here a little difference of 200 B. T. U.'s, I think is in favor of the amount which leaves. and I cannot definitely say.

Q. Well, Doctor, it must be, must it not; it must be, more heat must be given off than is given up by the eggs, otherwise the eggs would give out more and more heat to the machine; then they would eventually burn up, is that not so?

A. You see, in the Smith machine, they provide for refrigeration, and that is the way they take care of any heat—not in the patent, but in the Smith machine which is practicing some of the teachings of the patent, they find the heat is so great that they have to put in a refrigerator.

Q. You understand that refrigeration is only used, however, in Arizona and California, and in the very hot days in the late hatching season, when you have not the differential between outside atmosphere?

A. I hear you say it, and I understand what you say, but it also shows that if more heat is developed than can be cared for by the outlet, you have to absorb it by refrigeration.

Q. Oh, certainly.

[fol. 665] By the Court:

Q. Assuming there is no refrigeration, is it a fact and must it not be a fact that more heat than comes from the eggs must be taken up?

A. That is true, sir; and, your Honor, in discussing the patent, I think I have said at one place—I know I have said it before the trial—that the hot water pipes of the Smith patent, if the eggs are not properly arranged, would have to be cooling pipes in order to give the proper temperature for the lower eggs, if he did not follow his teachings; that is, his teaching is very distinct. The patent will work, as Smith says it works, and it will work properly, and if the heat——

Q. It is very simple and plain; the question is whether there is more air passes——

Mr. Ely: More heat you mean.

Q. More heat, I mean, than accumulated heat from the eggs?

A. Yes, sir, that is true.
Q. In both machines?
A. That is true.

By Mr. Ely:

Q. And you are not a practical incubator man, I understand?
A. I? Oh, no.
Q. And that same thing would be true in the Smith machine if you reversed the order of the eggs?
A. Oh, no.
Q. Would the reversal of the order of the eggs make any difference as to the number of heat units which those eggs give up?
[fol. 666] A. You see, the amount of heat in the Smith machine developed by the eggs is so slight, being only about one third of that in the James machine.
Q. I did not ask you about the James machine. I asked you about the Smith machine. Now, please answer my question.
A. I am trying to. I misunderstood it.

Mr. Toulmin, Jr.: Are you asking about the Smith machine or the Smith patent? There is where this whole confusion arises.

Mr. Ely: I am asking about the Smith machine, or about the machine shown in the Smith patent, if you want to, if the order of the eggs is reversed, does that make any difference whatever in the amount of heat units that are given up by those eggs.

The Court: He means, all together.
Mr. Ely: Yes.

A. No, it doesn't make any difference in the amount of heat given up by the eggs because that is a fixed amount by nature.

Q. Exactly so. Now, you did not understand me to say, by my series of questions yesterday, about this elevation of the incubator from the floor, to, say, two feet, you did not understand me to be driving at the point that that changed the machine, the Smith machine, from a pressure to a suction machine, or James Way from suction to pressure; you did not understand what I was getting at?
A. I did not know what you were getting at, Mr. Ely.

Q. What I was saying yesterday and what I think you [fol. 667] admitted, and I think possibly you have admitted it this morning, is this, the only thing that makes any difference to the eggs is the pressure of the air around the eggs; they do not care whether the pressure in the corridor, or in the channels through which the air came, they do not care whether that pressure is greater or less than the pressure which is surrounding them, do they?

A. No.

Q. Therefore, the eggs do not care whether they are operating in a pressure or suction machine, do they?

A. I don't think they would.

Q. And you can change your pressure around the eggs, in a James Way or in a Smith machine, by simply changing the elevation of this machine about two feet?

A. That is what the figures show.

Q. And therefore, my point was that, while you had a theoretical difference between the two things, as a practical matter it did not make a bit of difference. Now, do you agree with me on that?

A. Is that a question you ask me?

Q. Yes, I asked you if you agreed with me, as a practical matter, it does not make a bit of difference to the hatching of eggs whether you have got a suction condition, as in the James Way, or whether you have a pressure condition as in Smith?

A. I think the difference between the two machines would be very slight, if they were both placed in the same room; one would have a slightly lower pressure than the other, and if it was changed in elevation or if the barometer changed, both of them would go on, the same way, and the change in the barometer might be more than that difference in pressure.

[fol. 668] Q. And if you elevated one a little higher than the other, you would be able to correct the difference in pressure between the two machines?

A. That is right, sir.

Q. That is, if I had one machine on the floor and another machine on the second story, I would really have the conditions of pressure reversed, would I not?

A. It depends on which one you put on the second floor.

Q. I could reverse my conditions of pressure and have less in the Smith than in the James Way?

A. In that condition, you might.

Q. And what I am getting at is, it does not make a particle of difference in the operation of the thing as a hatching machine, this matter of the pressure within the egg chamber in the James as against the Smith; and do you agree with me on that?

A. I think that the variations of the atmospheric pressure is greater than the variation between the two machines.

Q. Now, will you answer my question?

A. And therefore, there may be big variations in the two working under the same conditions, one will be lower than the other and there would be some slight difference.

Q. I wish you would answer my question, please. I am asking you whether as a practical matter, it makes a particle of difference in these machines, as hatching machines for hatching eggs, this condition of pressure and suction that you have been talking about?

A. I do not know as a practical matter.

Q. You do not think it would, either, do you, Doctor?

A. As far as variation is concerned, I have stated over and over again, there is more variation due to the barom- [fol. 669] eter moving than the difference between those two machines, and that is all I can say.

Q. And you frankly do not think it makes a particle of difference; it is simply something that you have gotten up in some way to try to differentiate between the machines, and it does not make a bit of difference in the matter of the process of hatching eggs?

A. It is quite a difference, because in one machine, it necessitates—I am talking about practical reasons, not on the eggs, but in the machine, it makes all the difference in the world because it enables James to locate his outlet at a different point.

Q. Yes, exactly so.

A. And, therefore, that is a practical difference.

Q. And if he located his outlet at a different point from the outlet of Smith, it does not make a bit of difference to the eggs whether the air comes in at the bottom and comes in from suction or whether it goes out at the top from pressure; it does not make a bit of difference; we are talking about practical things; it does not make a bit of difference to the eggs does it?

A. I would not want to say that.

Q. Well, I think it is perfectly evident that it does not. Now, with regard to those tests that we made last night,

you understand, do you not, or at least I so understood it, that that machine that we tested last night was a standard Smith machine that had been in use for quite some time by some one by the name of Corey?

A. Yes, sir.

Q. And that in the condition in which it had been used [fol. 670] in the hatching of eggs?

A. That is my understanding.

Q. And that no changes had been made in it since it was brought into your place; it was the machine as it always hatched eggs for Mr. Corey?

A. As far as I know that is correct.

Q. Now, you took those readings on your barometers—on your anemometers, last night, and you made six readings, did you not, in the egg columns?

A. Yes, sir.

Q. And when you made your corrections for the calibration of the anemometer, and you took your average, you found that the average speed of the air through the egg column was 142 feet per minute?

A. That is correct.

Q. And that was in a Smith machine that was in actual operating condition?

A. Yes, sir.

Q. And you could have hatched the eggs in it if you had wanted to with that speed?

A. I think you could.

Q. And then you spent $1,000 on eggs to demonstrate that the speed through the air columns in the Smith machine is 142 feet per minute, is that so?

A. That recorded speed in that particular place was 142 feet average.

Q. And you spent $1,000 on eggs to prove that the only difference in the speed of the air in the Smith machine and in the James Way machine was a matter of seven feet per minute, is that not so?

A. The readings which you have in your hand there, which were made by Mr. Taggart and then put in evidence, were made with a large anemometer. I was very much surprised——

[fol. 671] The Court: No; he is asking you now about the difference in the readings between the Smith machine as you made it and the James Way. Confine yourself to that.

The Witness: I am confining myself to it, your Honor.

Mr. Toulmin, Jr.: Your Honor, he is referring to this thing he has in his hand.

Mr. Ely: And they have accepted this and have offered no other figures, and Dr. Greene, in answer to my question yesterday said he accepted this thing as correct.

The Witness: Yes, sir.

Q. Now, I am asking you whether the difference in the average speed in the Smith is only seven feet per minute higher than the average speed in the James Way machine?

A. The average reading on this, your Honor, is 142½. We have taken these numbers, but last night——

By the Court:

Q. I think you ought to answer the question.

A. Well, this is not correct, your Honor.

Q. Just answer the question, yes or no. Let us get down to the answer.

A. Will you ask the question again, please, Mr. Ely?

Q. It can be answered, yes or no.

Mr. Toulmin, Jr.: I presume the Court means, after he answers, yes or no, he may make any explanations he wishes.

[fol. 672] The Court: I suppose you can bring it out on re-direct examination, but I think we are making the records too long, and these questions can be and should be for the information of the Court, answered directly, for clarification. I think the question is simple, whether there is an increase of seven feet as between these readings you made last night in the Smith machine and readings in the James machine, as I understand it; just read the question.

(Question read as follows:

"Q. Now, I am asking you whether the difference in the average speed in the Smith is only seven feet per minute higher than the average speed in the James Way machine?")

The Court: That you made the test in here, you mean?

Mr. Ely: Yes, the tests that were made last night.

Mr. Toulmin, Jr.: Just answer that, yes or no, doctor.

A. I don't get seven feet difference.

Q. Well, perhaps my mathematics is wrong; perhaps it is six and one quarter feet?

A. I don't know that until you give me the figures and I will subtract them.

Q. The average for all the trays as given on Plaintiff's Exhibit No. 24 is 135.75. Your average last night was 142. Now, what is the difference?

A. The difference between 142.2 and 135.75 is 6.45 feet in favor—that shows that the 142.2 read in the Smith ma-
[fol. 673] chine is 6.45 greater than the 135.75 which you have read from the results of Mr. Taggart's——

Q. As I have read; will you look at it?

A. And the chart shows that 135.75.

Q. And you accepted these charts in answer to a question of mine yesterday, as correct, and you have no other charts or no other figures showing speed in the James Way?

A. That was correct yesterday morning; yesterday evening, all things have changed from what Mr. Taggart said at the test, and therefore, I do not accept these figures.

Q. You do not accept these?

A. I do not accept those figures.

Q. That is, since you found the speed was about the same, you want to change your testimony as to what the speed was in the James Way?

A. No, the results, as Mr. Taggart said he did not apply any corrections to the anemometer, the anemometer reading is not correct. Moreover, last night I read Mr. Taggart's testimony very carefully, and the inner readings were taken by setting an anemometer—putting it in position, starting the machine, running it for two minutes, and then taking it out, and as you noticed, the anemometer, after the wind stops, is continued. I believe the readings of the anemometer were not correct.

Q. It is rather late in the proceedings, I would say, for you to come in and dispute this chart which you said you were perfectly willing to adopt?

A. I think it is, sir, but Mr. Taggart never told us how
[fol. 674] he did it, and I thought as an engineer, he would not use an anemometer without correction.

Q. However, you adopted this chart as correct?

A. That is right, sir.

Q. And now you find that these conditions in the Smith machine are exactly as represented in this chart, now you want to change your testimony and say the conditions are, different in the James Way machine, is that the point?

A. That is not the point.

Q. Now, you knew very well when you were making criticisms of Mr. Taggart's readings on the Smith machine, that he had testified that he had not made corrections for calibration, is that not so?

A. That is what he stated in my presence; I do not know that that is true, but that is what he said.

Q. He did say so, however?

A. That is my understanding of what he said.

Q. And had you made similar corrections for calibration, which I understand do not vary greatly with different anemometers——

A. They vary very greatly.

Q. But had you added corrections for calibration to Mr. Taggart's readings, you would have come just about to the point that you came last night, would you not?

A. It all depends on what the calibration is. You see, there is a zero point in the curve.

Q. Yes, I understand.

A. And I don't know where the curve is.

Q. At those low speeds, however, all anemometers that you know about add for the purpose of calibration at those low speeds?

A. Usually they do, sir.

[fol. 675] Mr. Toulmin: I am going to start with the affidavits that were on the preliminary injunction motion, which have been marked in that motion, Defendants' Exhibits 1 to 7.

Mr. Ely: I object to the receipt in evidence of those affidavits, your Honor. They are ex parte affidavits. There was no cross-examination on those affidavits, and I object to them.

The Court: I think the Court has a right to consider them, do not you?

Mr. Ely: I do not think they should go in as exhibits in the case. No doubt you will consider what went on in the preliminary injunction proceedings, but they certainly are not evidenced in this case, because they are ex parte affidavits and there was no cross-examination.

The Court: I beg your pardon. I understood you were talking about the other—I thought you meant the affidavits before the Examiner.

Mr. Ely: Oh, no.

The Court: These are the affidavits on the preliminary injunction?

Mr. Toulmin, Jr.: Preliminary injunction motion. We are going to ask that Mr. Taggart's affidavits, their affidavits on the other side, be likewise put in so we will have this record complete.

Mr. Ely: You have a perfect right to put my affidavits in.

Mr. Toulmin, Jr.: We have a perfect right to put ours in, too.

Mr. Ely: I beg your pardon; not over my objection. I [fol. 676] am not putting in your affidavits.

The Court: Of course, you have the right to contradict witnesses by affidavits in contradiction, but how have you the right to put in here your own affidavits, proofs submitted on the preliminary hearing? It could not be done even if there were no preliminary hearing. How does a preliminary hearing give any additional right to do it? As a matter of law, it seems to me it would not be competent.

Mr. Toulmin, Jr.: If your Honor so rules——

The Court: I want to know, do you think the affidavits made on that motion would be——

Mr. Toulmin, Jr.: Yes, I think so because the witness—in particular, Dr. Greene, has referred to Mr. Shodron's affidavit as to the order of eggs, how they were set in the James machines. There has been cross-references from this testimony to these affidavits.

The Court: Mr. Shodron has been right here, a witness on the stand.

Mr. Toulmin, Jr.: Very well, your Honor.

The Court: I just want to be right on the question; I do not want to exclude any evidence that is properly receivable, but my ordinary limited knowledge of the law would lead me to think that these affidavits would be hearsay.

Mr. Toulmin, Jr.: All right, sir. Then we tender these affidavits which we have marked for identification, as De- [fol. 677] fendants' Exhibits 1 to 7, inclusive, under Equity Rule 46, and ask that they be so marked.

The Court: Have you any authority on that proposition?

Mr. Toulmin, Jr.: I will submit them to your Honor.

The Court: I do not want to exclude it if I am wrong on the matter but I am just applying the ordinary rules of evidence, which possibly might not be applicable to a case of this character.

(Seven affidavits marked Defendants' Exhibits 1 to 7, under Equity Rule 46, as follows: Dr. Greene, No. 1; Mr.

Shodron, No. 2; Mr. Willett, No. 3; Mr. James, No. 4; Mr. Markey, No. 5; Second affidavit of Mr. Shodron, No. 6; Mr. Walmsley, No. 7.)

Mr. Toulmin, Jr.: Then Defendants' Exhibit No. 8 is a certified copy of the file wrapper, in the Patent Office of the Smith Patent in suit, which we offer in evidence.

Mr. Ely: You go right ahead until you come to the next thing I object to.

Mr. Toulmin, Jr.: We have checked these over. In connection with No. 8, we have here a photo-lithograph copy, which we will check for accuracy and if that is found to be accurate, Mr. Ely and I have agreed to substitute it because it is easier to read than one of these photostats.

(Lithograph copy of file wrapper of Smith patent in suit marked Defendants' Exhibit No. 8.)

[fol. 678] Mr. Toulmin, Jr.: Exhibit No. 9 is a certified copy of the translation, of the Patent Office of the patent to Stulik.

(Certified copy of Patent Office translation of patent to Stulik marked Defendants' Exhibit No. 9.)

Mr. Toulmin, Jr.: We offer Exhibit No. 10, which is the volume of prior art which we have been referring to.

(Volume of prior art marked Defendants' Exhibit No. 10.)

Mr. Toulmin, Jr.: We offer Exhibit No. 12, a magazine containing an article entitled "Mammoth Incubator with fans for circulation of air, etc.", by George F. Paul, at pages 248-249.

(Magazine containing, at pages 248-249, article on "Mammoth Incubator with fans for circulation of air, etc.", by George F. Paul, marked Defendants' Exhibit No. 12.)

Mr. Toulmin, Jr.: We offer Exhibit No. 13, which is a copy of the publication "The Dollar Hen", with special reference to pages 77 to 107.

(Copy of Publication, "The Dollar Hen", particularly with reference to pages 77 to 107, marked Defendants' Exhibit No. 13.)

Mr. Toulmin, Jr.: We offer as Exhibit No. 14 the book "The New Egg Farm".

(Copy of book, "The New Egg Farm", marked Defendants' Exhibit No. 14.)

Mr. Toulmin, Jr.: We offer as Exhibit No. 15 the catalog of the Smith Standard Company, with particular reference to pages 10 and 11.

[fol. 679] (Catalog of Smith Standard Company, with particular reference to pages 10 and 11, marked Defendants' Exhibit No. 15.)

Mr. Toulmin, Jr.: We offer as Exhibit No. 16 this circular of the Smith Standard Company in connection with separate hatcher matters.

(Circular of Smith Standard Company in connection with separate hatcher matters marked Defendants' Exhibit No. 16.)

Mr. Toulmin, Jr.: We offer as Exhibit No. 17 this copy of the large Smith Incubator Catalog No. 47.

(Copy of Large Smith Incubator Catalog No. 47 marked Defendants' Exhibit No. 17.)

Mr. Toulmin, Jr.: We offer the several drawings, 18-a, 18-b and 18-c, of the internal construction of our incubator; I want to call to the attention of the Court that there was an error in leaving out that top line. We discovered it when we got here and we have produced corrected drawings which are already in evidence. The draftsman left out one of those lines indicating that tin on top. We discovered that when we got ready for final hearing. That was on the preliminary injunction.

(Three drawings showing internal construction of various sections of Defendants' incubator marked Defendants' Exhibits No. 18-a, 18-b and 18-c.)

Mr. Toulmin, Jr.: We offer as Exhibit No. 19, a chart showing various types of construction that have been held by District Courts and various Courts of Appeals as non-[fol. 680] infringing. We have had quite an argument on that before. Part of it was admitted by Mr. Ely as correct; the other part was not.

Mr. Ely: I object to that as not being proven in any stage of these proceedings. I think you have already sustained my objection.

The Court: As far as these charts are concerned, of course, if you will call my attention to the cases, I will see what the cases are. I suppose it might be of aid to the Court in construing——

Mr. Toulmin, Jr.: That is the only purpose of putting this in; not to conclude you or the other side on the construction, but to have before you our understanding and representation of these structures, some of which are admitted by the side as correct. Your Honor will compare that with the opinions that are in evidence. You are not bound by Exhibit No. 19. It is for convenience and aid to the Court. Now, I am going to offer this Exhibit; if your Honor rejects it, I will mark it for identification.

The Court: Counsel, as I recall it, objected to some of the references made underneath the diagrams, which were your conclusions as to the effect of the opinion.

Mr. Toulmin, Jr.: No, your Honor, they are quotations from the opinion.

The Court: I think there is one——

Mr. Toulmin, Jr.: I am perfectly willing to have the Court disregard that.

Mr. Ely: I object to these things going in, your Honor, as [fol. 681] they are not proven.

Mr. Toulmin, Jr.: We think they are proven.

Mr. Ely: What right have they to put in something that they think is something that was in the case, and ask you to look at it——

Mr. Toulmin, Jr.: Just as much right as you had to put in your Exhibit 27, which is an illustration on the same basis.

Mr. Ely: Mr. Taggart was present at every one of those trials concerning which I put in drawings.

Mr. Toulmin, Jr.: Yes, and Mr. Taggart answered my questions about three of the illustrations in Exhibit 19, and admitted that those illustrations were correct representations.

Mr. Ely: I think you have no business putting in something where the construction has not been proven; it is not true.

The Court: That does not apply, as I understand, to the Petersime case.

Mr. Ely: No; may I come up there a minute?

The Court: Yes, let us see what the differences are.

Mr. Ely: I have no objection to this, this or this.

Mr. Toulmin, Jr.: Make the record clear. "This" does not mean anything.

Mr. Ely: I have no objection to the showing under the heading "Smith vs. Petersime". I have no objection to the top two views under the heading "Smith vs. Blum". I ob-
[fol. 682] ject to the third showing under the column headed "Smith vs. Blum". I object to all of the drawings under the column headed "Smith vs. Bolling". I object to all of the drawings under the column headed "Smith vs. Hillpot". Those have not been proven, and they are not correct representations of the things that appeared in that litigation.

Mr. Toulmin, Jr.: With reference to the third illustration, under the Blum column, the Court will find that a duplicate from the record of Blum, which was put in. Your Honor can determine the defendants' construction, and your Honor can compare that and determine whether it is right or not. As to the Boling construction in the third column, your Honor will have the testimony in the Bolling case, a certified copy of which was put in here, to determine whether that is correct. Mr. Taggart, as to the Hillpot construction, said that that construction was an experimental one, although involved in the case, but experimental. He also made a drawing for me on cross-examination, showing what he said was the machine in issue in that case.

Mr. Ely: You can put that in. No objection to your putting that in.

The Court: I thought you said Hillpot is objected to.

Mr. Ely: It is another drawing of another machine.

The Court: Mr. Toulmin, I think that the safer way is to exclude this, and I do not think it is at all harmful to you, because I think the same things appear—what the deci-
[fol. 683] sion is will appear in the decision itself. Now, unless you can point out in the decision that the particular descriptions that are shown on this diagram were descriptions of the instrument or the things the Court passed upon, that is another thing; but to introduce here certain diagrams which I cannot determine whether they were considered or not——

Mr. Toulmin, Jr.: I asked Dr. Greene in connection with that matter, as to whether he had read those records and whether those drawings were correct, in his connection as an engineer, and he attempted to testify, and that testi-

mony was excluded, on a number of these illustrations; upon objection, that was excluded. Now, I have done all I could to get before the Court the illustrations. I have all the records in as they have been available. I have attempted to have the witness, an engineer, who has read those records and had looked at those drawings, say they are correct descriptions in his understanding.

Now, I present this to the Court, and I ask that this Exhibit 19 be marked for identification under that number, and I tender it under Equity Rule No. 46, for such advantage as it may be to the Court. When your Honor reads the proof and the decisions, I think your Honor will find I am correct, that this will be very helpful to you in passing on the matter.

The Court: I am going to exclude the entire exhibit.

[fol. 684] Mr. Toulmin, Jr.: Then we tender it under Rule No. 46.

(Chart showing various types of construction that have been held by District Courts and Courts of Appeals as non-infringing, with quotations printed at the bottom, from the Courts' opinions, marked as Defendants' Exhibit No. 19 under Equity Rule No. 46.)

Mr. Toulmin, Jr.: Now, we come down to the deposition exhibits. Have you any objection to offering these?

Mr. Ely: No.

Mr. Toulmin, Jr.: They are listed here in the depositions as filed. They are "Exhibits 20 to 27, inclusive, Exhibit 26 being a, b, c, d, e, f, g. Unless Mr. Ely wants me to read them out, I will not read them out to save time.

Mr. Ely: No.

Mr. Toulmin, Jr.: We offer them in evidence, and we offer the three depositions of Hastings, Hickox and Peabody, which were taken. I do not think, under your practice, your Honor, it is necessary to give the depositions any exhibit number, but just offer them in evidence, is sufficient. That takes care of that.

(Defendants' Exhibits Nos. 20, 21, 22, 23, 24, 25, 26-a to 26-g, inclusive, and 27, appearing in depositions of Hastings, Hickox and Peabody, received in evidence.)

Mr. Toulmin, Jr.: I offer the Smith testimony in the case of Buckeye and Smith vs. Cooley, in the Third Circuit with

[fol. 685] the understanding that Mr. Ely, if he has a copy of the original record, may substitute it for this testimony if he wishes; otherwise he can correct.

Mr. Ely: Yes, I think that is all right; and I think also it should be noted at this point in the record that we will insert excerpts from the Hillpot, Snow, Wolf and Waxham, cases, where Dr. Smith also testified.

Mr. Toulmin, Jr.: We have no objection. We offer this as Exhibit No. 76, so it can be marked.

(Testimony of Dr. Smith in case of Buckeye and Smith vs. Cooley in the Third Circuit marked Defendants' Exhibit No. 76.)

Mr. Toulmin, Jr.: We want to re-offer Exhibit No. 28, which was the Petersime Catalog, here marked for identification.

Mr. Ely: I will withdraw my objection.

Mr. Toulmin, Jr.: 28 is in, then.

(Petersime Catalog, previously marked Defendants' Exhibit No. 28 for identification, marked Defendants' Exhibit No. 28 in Evidence.)

Mr. Toulmin, Jr.: We offer as Exhibit No. 29 the Taggart sketch he made on cross examination, showing the Hillpot construction that was in issue down in Philadelphia, in this Hillpot case.

Mr. Ely: No objection.

(Sketch of Hillpot construction, made by Mr. Taggart, previously marked Defendants' Exhibit No. 29 for identification, marked Defendants' Exhibit No. 29 in evidence.)

[fol. 686] Mr. Toulmin, Jr.: We want to re-offer Exhibit No. 48, which is the Volume of prior art cited in the Jones-Cyphers case, an important decision which we are going to rely upon in this Court.

Mr. Ely: No objection, with the understanding that those patents were not set up in the answer.

Mr. Toulmin, Jr.: That is right.

Mr. Ely: They are only offered for the purpose of showing the state of the art and not anticipation.

Mr. Toulmin, Jr.: That is right, and to show what was before the Court at that time.

(Volume of prior art cited in Jones-Cyphers case, previously marked Defendants' Exhibit No. 48 for identification, marked Defendants' Exhibit No. 48 in evidence.)

Mr. Toulmin, Jr.: We want to re-offer Exhibit No. 49, which was a group of our own patents; your Honor will recall the Markey patents and the Nix patents.

Mr. Ely: I object to that as entirely without any bearing on this situation. We are not trying the question of whether there might possibly have been a patent granted to James Way on this structure that is in suit. What we are trying here is the question of infringement of the Smith, earlier underlying Smith patent, by James Way construction and I cannot see where patents which were issued some 15 or 17 years later, to James Way, with narrow claims of structure, have got any bearing whatsoever upon the matter of infringement. It has been so held in many cases.

[fol. 687] Mr. Toulmin, Jr.: Our position is that the Supreme Court, and the Courts of Appeals, and this District Court, have held to the contrary.

The Court: You can submit authorities.

Mr. Toulmin, Jr.: Do you want me to submit authorities now?

The Court: No, I will take it under advisement. Are these any reissued patents?

Mr. Ely: No.

The Court: Your claim, Mr. Toulmin, or your position is that the proof of patents subsequent to the issuance of the Smith patents is competent?

Mr. Toulmin, Jr.: Yes, your Honor, is vital to this defense as showing a strong presumption of non-infringement, so held by the Supreme Court of United States and your Court of Appeals.

The Court: You mean because of the action——

Mr. Toulmin, Jr.: Of the Patent Office.

The Court: In passing——

Mr. Toulmin, Jr.: Yes.

Mr. Ely: Mr. Toulmin very well knows that the Patent Office does not pass on the question of infringement when it grants patents on improvements.

Mr. Toulmin, Jr.: It does on the question of infringement.

Mr. Ely: It does not pass on the question of infringement, and he knows that very well.

[fol. 688] The Court: Well, I would just like to have a case on each side to see what there is to it. I can see the basis of his argument.

Mr. Ely: I would suggest, your Honor, that those go in and you defer your judgment on that until you look at the decisions.

Mr. Toulmin, Jr.: That is satisfactory to us. That is the way we had it before, but I had to reoffer those; in the event the Court denies our right to put in Exhibit No. 49, marked for identification, let the record show that I tendered that evidence under Equity Rule 46.

The Court: Very well.

(Folder of patents owned by defendants, formerly marked Defendants' Exhibit No. 49 for identification tendered in evidence under Equity Rule No. 46.)

Mr. Toulmin, Jr.: Now your Honor, I would like to offer in evidence this little model of the James Way—it will be convenient to refer to—as our Exhibit No. 77.

(Small model of James Way incubator marked Defendants' Exhibit No. 77.)

Mr. Toulmin, Jr.: And we have another block model here of James showing separate hatcher, which we offer in evidence as Exhibit No. 78, for illustration.

The Court: That is what you call the hatcher?

Mr. Toulmin, Jr.: Yes, separate hatcher mounted on top of the block incubator so you can see the arrangement.

(Block model of James incubator showing separate [fol. 689] hatcher marked Defendants' Exhibit No. 78.)

Mr. Toulmin, Jr.: We have a model here of the Smith patent that we would like to offer in evidence as No. 79.

The Court: That is the shell, you mean?

Mr. Toulmin, Jr.: Yes, and some of the interior works with the detachable end doors and the curtains.

(Model of shell and some of the interior works of Smith machine marked Defendants' Exhibit No. 79.)

Mr. Toulmin, Jr.: And we would like, in order to be consistent here, to offer in evidence the Taggart affidavits on the injunction motion as our Exhibit No. 80.

Mr. Ely: No objection.

(Taggart affidavits on preliminary injunction marked Defendants' Exhibit No. 80.)

Mr. Toulmin, Jr.: The Defendant rests, your Honor.

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JOSEPH INSKIP TAGGART, recalled as a witness on behalf of Plaintiff in rebuttal, testified as follows:

Direct examination.

By Mr. Ely:

With reference to considerable discussion about this matter of separate hatchers, and the matter of the spread of B. W. D. in incubators there has been some intimation, possibly, that we stick to our old scheme in spite of how every-
[fol. 690] body else has gone. To give a brief history of the situation: In 1926, Hinshaw, Upton & Moore, in making certain investigations at Manhattan, Kansas, were working with a Buckeye forced draft machine; and found that the germs of salmonella pullorum were spread in that incubator. They made their report on that incubator only. They had not checked any of the others.

The Court: Is that the report to which Dr. Greene referred, and the other referred?

The Witness: Yes, sir. Dr. Hinshaw, whom I know personally, did not make tests in any other type of machine. Following that, the Bureau of Animal Industry as a part of the Department of Agriculture at Washington, took up the investigation on their disease farm just out of Washington. There they investigated, with different types of incubators, and also with hens, setting hens. Those investigations took place at Beltsville or Bethesda, wherever the disease farm is located. They worked with different types of incubators, both forced draft and also still air, and also with hens. They found that wherever diseased chicks were hatching in proximity with free chicks, or what we will term as free chicks, the disease might spread, whether it was under hens, in still air machines, or in forced draft machines. In other words, the disease spread in all types of machines.

[fol. 691] I attended those investigations at different times, helped plan the experiments, and knew what was go-

ing on from the very beginning until the completion of the program. Following that there were certain investigations made at Kansas Agricultural College, and also at Ohio State University, to show how you could prevent that spread.

By the Court:

Q. Was any report made of that investigation to which you have referred?
A. Yes, sir.
Q. Published report?
A. Yes, sir.

By Mr. Ely:

Q. You have it, have you not?
A. Yes, sir.
Q. Where is it? Have you got it here?
A. I will get it (producing).
Q. This is the one you are speaking of.
A. Yes, sir.

The Court: That is the one you first spoke of?
The Witness: This is the one we spoke of, that was put out by Dr. Bunyea and Dr. Hall, who are investigators at Washington.

I also have the report of the Ohio Poultry Investigation conducted by Ohio State. These investigations are summed up, really in the Ohio Bulletin which came out later, and if you refer to page 7 of the Ohio Bulletin, down near the [fol. 692] bottom of the page, under the heading "chick down spreads bacteria," it states:

"During the season of 1928 studies made at Ohio State University showed that disease germs are spread on the down of infected chicks. This means that all chicks hatching in an incubator are exposed to all the diseases which any of the chicks may be infected."

And it goes on to refer to the investigation there at the Bureau of Animal Industry. It shows that disease may be spread from one end of an incubator, even though the egg chambers are separated:

"The dust and chick down floating in the air of the incubator room are taken into the machine with fresh air for ventilation, and no doubt cause the spread of the disease."

Now, on page 8, near the bottom of the page, in the second line—or we will read the first part of the paragraph under "The study of disinfection during incubation." It says:

"Great danger lurks in the floating dust and chick down in the incubator room and incubator. There can no longer be a question about the spread of disease in all types of incubators from infected to healthy chicks by this means."

It has been found that the most effective way of combatting the spread of B. W. D. is not to hatch eggs from in- [fol. 693] fected hens, but in the corn belt and in most of the United States, it is not possible, for the most part. The disease is so widely spread; and the best method is to keep the humidity at such a point that the particles of dust and down do not float about the incubators; and then, furthermore, in the forced draft machines, where you are hatching in forced draft machines, you can fumigate with formaldehyde gas at stated intervals and kill the germs before they start to float about the machine.

You do this after the chick is hatched from the shell. No spread can take place until the chick gets out of the shell, and until that chick has dried sufficiently for the down to float about. The germs are on the outside of the chick, while the down is still moist, and they will be liberated when the chick dries, and if the air is dry enough for it to float about in the air; but we have found on experiments that if we keep a wet bulb reading of 88 to 90, that is, a wet bulb reading during that period, there are practically no germs floating about in the machines, and that is our reason for specifying a humidity of 88 to 90 during the period in which the chicks are actually coming from the shell.

Asked whether the forced draft machine was better or worse as an effective means for controlling the humidity, the witness said:

In the still air machines there is no way to control the humidity. You depend entirely upon evaporation, and if you are not forcing the air about in a still air machine, you do not know how much humidity you have. It is purely a matter of guess. There is no way of measuring it, that is practical [fol. 694] for a hatchery man. Even the James catalog specifically condemns any instructions for measuring the humidity of air in a still air machine, and it is only in forced

draft machines that you can get the humidity that you want, and can hold it at a specific point. In forced draft machines, where you have air moving, there are instruments that will measure and tell you just what humidity you have.

The presence of excess or of more humidity, when the chicks are out of the shells, prevents the down upon which the germs are lodged from drying so rapidly. Instead of the chicks drying off in four or five hours, it would take 12 or 13 hours or longer, to dry; and then, if you hold the humidity at 88 to 90, wet bulb reading, the down does not float about in the machine to any marked extent at all.

In actual comparisons, we have found that when we changed the wet bulb reading from 76, which was the custom prior to 1928, to 88 to 90, that we cut the amount of foreign particles floating about in the air to about seven percent. of what it was before that.

These particles of down are light enough to float in the air of what is known as the still air incubator, such as the James Way type, that is the hatcher. They do float about. This was so demonstrated at the Washington experiment, and they not only float about in the incubator, but they pass out into the hatching room and are carried around by the air currents and back into the other incubators again; and they were found spread from one end of the sectional machine to the other end, where they thought they were trying to keep them separated.

[fol. 695] As a means for combatting this spread, the forced draft machine is much better, as far as the matter of moisture is concerned. Asked whether a forced draft machine or a still air machine was better for fumigation, the witness said: You cannot fumigate in a still air machine, because it is one of the peculiarities of the set-up, you have to have forced draft and high humidity, which is possible in a forced draft, to make it practicable. Any attempts that have been made to fumigate still air machines with formaldehyde have resulted in failure. It affects the chicks in the first place. It is, in theory, forced through the machine so as to kill the germ, and furthermore it affects the chicks very decidedly and causes a heavy mortality in them.

As to when our company recommended increasing the moisture in the incubator at the time of hatching, the first definite instructions we gave out on that was in July, 1928.

Asked how long prior to that time the Smith and Buckeye machines had been in successful operation, the witness said: The Smith machine started to manufacture in 1922, as it now is, and the Buckeye in 1917. They sold thousands and thousands of those machines without any recommendation about increasing humidity at hatching time. Some of them had very definite instructions on not increasing moisture at hatching time and so far as the records I have been able to get hold of are concerned, the Smith people were the first people to come out definitely with any instructions about increasing humidity at hatching time. If you have the same relative humidity, the same average [fol. 696] relative humidity right straight through, you will get substantially the same results, as to the hatching of eggs. The hen does not increase humidity at the time the chicks are coming out. I have gone through dozens of experiments that have been conducted in scientific investigation into incubation and not one have I found where it said to increase humidity at hatching time.

In 1928 we discovered high humidity would hold down the spread of this disease. The increase of humidity was simply an improvement in the way of using the Smith machine. It did not change in any way the basic process of the Smith machine.

The Court: Were there any instructions saying anything about the use of formaldehyde in certain periods of incubation?

The Witness: Yes, instructions have been put out since 1928, recommending that use.

We recommend one fumigation when about one-third of the chicks are out of the shell; another fumigation approximately 12 to 15 hours afterwards, and in some cases a third fumigation 12 to 15 hours later. These fumigations are at short intervals and the strength of the gas is only in there about ten minutes. Fumigation is not recommended before the chicks start coming out of the shell to prevent the spread of B. W. D. We have some other micro-organisms in there that sometimes develop, such as certain weeds get in fields some times, and by using a stronger fumigation, stronger than the chicks would stand, we are able to fumi- [fol. 697] gate the eggs and get rid of that. That is not

a matter of combatting B. W. D. It has nothing to do with B. W. D.

I recall that Dr. Hutt said, at Page 470 of his testimony, "At the 17½ or 18th days, the process of hatching is begun" and again on page 472, "I would not say that the process of hatching began on the 17½, but on the 18th day, then the inclusion of the yolk begins." I recall that Dr. Hutt said in there that the process of hatching, as distinguished from incubation, began on the 17½ and 18th day. I recall you asked Dr. Hutt for authorities. He gave you the names of two books. I made a careful search, not only through those books but other books, and I have not found any authority for any such division, whatever.

Wherever in general terms "hatching" is used it covers the whole period, but wherever in a scientific treatise they have used the word "hatching" to designate a specific part of the process, it covers only that which would correspond to birth or to the actual coming out of the shell, which is a matter of a few hours. I could find no authority in these books cited by Dr. Hutt, which divided the period into a period of incubation and a period of hatching, the line of which was marked at the 17½ or 18th day, but I found other statements otherwise. I have those books.

This book I have is entitled "Poultry Production" by Lippincott, this is the 1927 edition which Dr. Hutt referred to. On Page 264 it speaks of the development of the egg, "The growth and transformation of the tiny living portion [fol. 698] of the organ or a just vitalized egg through the successive, though well defined stages of blasdoderm, embryo, and finally a chick, capable of breaking its way out of the shell do take up an independent existence. The incubation period thus is analogous to the gestation period in mammals. It begins with the fertilization of the ovum and continues until the hatching or birth." Then, again, on the fourth line, at the top of page 265 it reads "Of the 21 days of the incubation period", definitely specifying the incubation period covers that 21 days. At numerous other places it makes similar statements, and to show that where he makes a distinction, such as for special purposes, I ask you to refer to the bottom of page 289 where he has referred to certain tests that have been run. "In the first test hatching occurred on the 19th and 20th days; in the second on the 20th and 21st day." In those cases, he has

been speaking about tests he has run with incubators at different temperatures, to see whether the incubation period was shortened or lengthened.

Then there is Dr. Jull's book, "Poultry Husbandry", by Morley A. Jull, and it is a 1930 edition. On page 169, the first line, under the paragraph entitled "The development of the chick", he says "The normal incubation period of the egg of the chicken is 21 days." The bottom line of that same paragraph says "The incubation period of all chicken eggs may be said to be 21 days." Then on page 182 there is an interesting description in which he describes the development of the large muscle at the back of the chicken head, which the chick uses for the purpose of picking its [fol. 699] way out of the shell. It states that this muscle starts to develop about the 19th day, reaches its greatest size about the 21st day, and then the day after hatching, it starts to dry up and by the 8th day is practically disappeared, the eighth day after "hatching." At the bottom of this page, page 182, it refers to this complex muscle, that the peak of growth cycle of the complex muscle does not occur until the 21st day. At the end of that paragraph, on the top of page 183, it states "We may take the growth cycle of this muscle as a typical example of the temporary and emergency growth acceleration, then a second part, and as a type of the important and rapid changes which take place in the chick immediately prior to hatching". I simply mention those two points to show that where they do make a distinction between hatching and incubation, hatching covers only the birth period or actual cutting out of the shell.

After you have carried a hen's egg up to this birth point, there is a great deal more tolerance possible in your control arrangement and your temperature, and so forth, around an egg during the last period, that actual cutting out period, than there is in the earlier stages of incubation. You can abuse it much more during those last few hours. We do not recommend that you abuse it, but it will stand lots of grief in that particular period. You could carry out the process of hatching eggs, in the Smith machine, up to the time the chicken peeps and then you could take those trays out and set them any place where you could keep the temperature reasonably right and have a fairly good humidity, and the chicks would come out. It is not necessary [fol. 700] to carry it up to the high point we mention here

for the purpose of hatching. The eggs which are in the incubator are receiving the benefit of the Smith process the whole time, even though they may not be hatching in the technical sense of the word.

"Incubation" and "hatching" are considered the same in common parlance.

The Fullington Patent 1,205,445, is for an incubator attachment. He shows an ordinary incubator with one layer of eggs and, while he shows no eggs at all, it is an ordinary incubator, and into the side of the incubator he has put a pipe which will carry air from a fan on the outside into the incubator and a corresponding pipe to carry air out of the incubator. The pipe 18 carries the air in and the pipe 17 takes the corresponding amount out. The pipe 17 discharges into what is known as a fan compartment, but the fan does not draw its air from the fan compartment but rather through an opening 20 which is to the outside. This fan is supposed to be normally quiescent, that is, normally it is not supposed to operate and is set in motion when the lamp, which is furnishing the heat, raises the temperature to a point that is too hot. That is, the action of the lamp, as described here, controls the electric contacts which start this fan in motion and when the fan is in motion, it is supposed to blow cool air into the incubator and force the hot air out. That is not a recirculation or recycling of the same body of air in the interior of the incubator. It is blowing the air right through the incubator. That would naturally carry out any moisture content within the incubator. He would naturally carry out his moisture content [fol. 701] if he blew his heat out. That does not operate continuously. It states it is normally quiescent. As to when and under what conditions the fan will start to work, it states here if the heating element or lamp is producing too much heat, there is a damper above the lamp that will raise and make the electrical contact and start the fan going. It states here "if the heater gets too hot", it does not say what happens inside the machine. That is shown as an attachment on an incubator of the single deck, old style machine, which held approximately 200 eggs or less. He does not say anything there about any staged incubation. The only one of these Fullington devices that I have ever seen was the one that Fullington submitted in the Waxham hearing at St. Louis. As to whether that ever got on the market, it was never manufactured. There was

a crude affair which Fullington introduced there as a sample he made at that time. He stated he used it during one or two hatches in 1914 and never used it since.

In that Fullington machine, his idea was to control the heat by blowing cold air into the machine and forcing the hot air out. He never had staged incubation, as I recall. As when defendants purchased this patent, all I know is what Mr. Fullington testified to in the Waxham Case. I have never seen a James Way machine carrying the Fullington Patent number. That Fullington patent and the alleged Fullington prior use was before the Master in the Waxham case.

I have a patent here to G. E. Goldstein, No. 1,137,752, which patent is for an apparatus for the curing and arti- [fol. 702] ficial aging of cigars. I am familiar with what patents were set up in the various suits. This Goldstein patent has been referred to in practically all of the cases. The Proctor patents have been in practically all these suits.

Comparing the principle in the Goldstein Patent with this machine which was supposed to be constructed in accordance with the Goldstein patent, the great big difference is in the way the air is circulated and the amount of air that is circulated. The Goldstein Patent is for the curing and artificial aging of cigars. In such a device they are not particular about the exact temperature. They are particular about humidity; they want a high humidity. They have a small fan, a very small fan, shown in the patent, in close proximity to a humidifying device, and the purpose of this is to keep fairly constant humidity in a room. In various humidors, that I have been in, they might have a room two or three times the size of an ordinary bed room, and an eight inch fan would be as large a fan as they would use, and that would be running maybe eight or nine hundred R. P. M. Comparing that fan with the fan in the so-called reproduction of the Goldstein patent, in the reproduction the fan was many times larger, by comparison. In the reproduction of the Goldstein machine, the fan was mounted in a panel that would compel air to circulate in definite paths and in the patent there is no such panel shown. They have not followed the disclosure in the Goldstein reproduction. As a matter of fact, I have never found a one of these constructions shown in these various patents for hatching eggs, to my knowledge on the market or ever put to use.

[fol. 703] Mr. Ely: The two bulletins are sufficient. The first one I will put in, "Transmission of pullorum disease" by the Agricultural Department.

(Bulletin entitled "Transmission of pullorum disease" by Agricultural Department received in evidence and marked Plaintiff's Exhibit No. 30.)

Mr. Ely: And a second booklet entitled "Sanitation in Hatcheries".

(Booklet entitled "Sanitation in hatcheries" received in evidence and marked as Plaintiff's No. 31.)

As to commenting on Defendants' Exhibit 75, which is the tabulation Dr. Greene produced this morning, in the first place, the machine shown down there had the standard type of fan we used for seven, eight or nine years in actual operation, and he has mis-quoted here. It is stated that I had twelve hundred feet per minute leaving the fan. At one spot where the air was shown coming off there is a velocity quoted there of 1140, I believe. At one point taking the tests the same way, last night, we had a velocity of 1000, practically nine hundred and some feet. At that point I mean, and the comparison here is clearly exaggerated. If the conditions as produced by the machine down there last night, the fan delivery and so forth, were very comparable with the conditions under which I experimented, and had I made the correction on the anemometer, which I did not state that I made; I stated that I recorded the readings of the anemometers placed in those positions. I knew the [fol. 704] speed was not accurate, and it was so stated; it was given to show direction and air movement, and had I made those corrections there would not have been very much difference between what was found last night and what I was working with, and, you can find that much variation in different machines.

In response to questions by the Court, the witness testified:

As to whether the fan in the Smith machine here was the same fan or a different fan in the machine in which the test was made yesterday, the fan used in the machine in which the witness made the test, concerning which he testified as to the speed, the two fans were of the 2900 series, and the

2900 series indicates a certain style fan, and certain style motors and blades, but these down here were called 2989, which means it was a 110 volt, 60 cycle fan. They are the same general type of fan.

Regarding the statement of Dr. Greene that the air moved at the rate of 749 feet per minute, Dr. Greene's method of taking the reading is entirely different from the method which I used and *entirely different from the method which I used and* entirely different from the method that I have ever used. I put the anemometer at the point of greatest velocity, that is, the velocity over the entire surface of the fan is not the same. At the outer two or three inches you get practically all of your delivery of air, there is very little air delivered in the center. Now, when I took my reading with the fan, the anemometer up to the fan, I put it at the point of the highest velocity and took a reading at that point [fol. 705] and I recorded there 1140. If you take your minus correction off that, which you would have to do if you follow his method——

Q. I do not understand what you mean by his method as distinguished from your method. He made a reading below the fan with the same instrument you did, but perhaps not quite as close proximity of the fan.

A. When he made the reading, he kept the instrument going back and forth over the entire surface of the fan, under portions of which air was barely moving and other portions air was moving fast, with the idea of getting an average velocity of the entire space.

Q. How could he see the average velocity? He would have to bring the instrument down?

A. He was holding it underneath the fan in the corridor of the machine and was moving it back and forth underneath the machine and he got an average velocity of seven hundred some feet. The highest velocity shown was approximately one thousand. That is, at some different points in relation to the tips of the fan.

Mr. Ely: I was there when it was done and the anemometer on the stick was held at one point and the anemometer was passed in an arc across the entire fan.

When I measured that 1140. I was talking about, that was the speed at the highest point on the fan, situated at the tip. A current of air distributed by a fan of that kind will,

increase as you go out toward the edge of the fan, as much as from two to one thousand feet per minute.

There would be practically a dead spot in the middle of [fol. 706] the fan, theoretically. Dr. Greene's measurements were made, including not only the high velocity point, but the low velocity point and possily the dead point. My 1140, that I was talking about, was at the high velocity point.

By the Court.

Q. How could he get the average of the instrument during each second of contact?

A. He would read it for a minute. One revolution of the hand indicates 100 feet per minute, or 100 feet has passed and he would put it up and hold it for a minute and move it back and forth across the surface of the fan for a minute, as it was being moved it would cross and recross about five or six times, during the course of a minute, to show the highest and lowest across there. You would get the average of it. My understanding is that his reading is the average of the discharge. He got that average by taking what the instrument recorded during the minute and said that that would be the average because he had kept moving it back and forth and during the entire minute it recorded 700 and some feet, in the course of the minute, and he kept it moving all the time.

We did not attempt to take it at the lowest point. It would give the average, as he took it. It did not give the highest and lowest, it just gave the average.

As to the velocity of the air through the eggs, and what is to be understood as the differences, if any, between my conclusions and Dr. Greene's, in the conditions we had there last night, the velocity up through the eggs averaged 142 [fol. 707] feet per minute, making all corrections. There are six different stations, as Dr. Greene testified, with the anemometer, and the average of those was 142 and a fraction.

My readings as indicated on this Exhibit 11-A, show an average of about 75, or 75 to 80, but there was no correction made in those, similar to the reading of the anemometer which they made in their test last night.

The correction at those speeds is between thirty and forty feet per minute, which would run it up over 100, and

you can easily get that much difference between different machines and the way they are loaded, the difference between that and 135 or 140, that is, if you made the corrections which would run well over 100. I did not make the corrections. I just put down what the anemometer read and I so stated.

Examination by Mr. Ely:

I made thousands of readings.

Q. And to make thousands of corrections would have increased your labor apparently to no use, is that about what you mean?

A. That is the way I handled it, and so considered it. At these lower speeds the corrections on the anemometer is about the same and when you get down to the velocity or speeds shown, there are no definite corrections given, it simply indicates directions and shows there is air moving through there that will turn the anemometer that fast, but it does not show the absolute readings at those lower speeds at all. There should be a correction of between [fol. 708] thirty and forty feet per minute. It does not make any difference, when you get a speed up around 100 per minute, for practical results, whether you have 100 feet per minute, or 125 feet or 150 feet per minute. The requirement for speed is it must be fast enough to keep the temperature throughout the chamber substantially uniform. The speeds I find in the Smith and James Way, in this range, come within that definition.

Mr. Ely: If your Honor please, what are we going to do with the machines in storehouse marked as exhibits?

The Court: Your photographs and the information of these is sufficient.

Mr. Ely: It is understood we will withdraw those machines and produce them if either party wants them.

(The case was then adjourned until April 9, 1934 at 2:30 P. M. when the following proceedings were had with the same appearances as before.)

Mr. Toulmin, Jr.: We would therefore like to offer in evidence, and tender in evidence, the depositions taken on behalf of the defendants of John G. Lieber, L. W. Pitts, C. T. Brewer and Van D. Campbell, together with the ex-

hibits referred to in that series of depositions, as Defendants' Exhibits 22-B, 22-C, 22-D, 22-E, and 22-F, which are photographs of the blower in this prior use.

I will ask the stenographer, before we get away, to mark them. The originals have come in to the Clerk's office and [fol. 709] we will have the originals marked so everything can be checked up.

I would also like to offer the letter of March 26, 1934, of Mr. Hanna, managing agent of the National Commercial & Breeders Hatchery Co-Ordinating Committee, transmitting to our plant the official manual of the Code for Commercial & Breeders' Hatcheries Code, 1934. We had the tentative draft here as Exhibit 72 and I promised to produce the copy officially adopted. I think it would be wise to mark it as Exhibit No. 101.

Mr. Ely: I object to receiving any further exhibits.

The Court: You are substituting?

Mr. Ely: Is it the same thing as the old one?

Mr. Toulmin, Jr.: This is the official copy and in substance it is the same one.

Mr. Ely: I object to it. I do not see any reason for offering it and I object at this late date to putting new exhibits in the case. We have not had time to look at it and have not had time to answer it, and I object to it.

The Court: I think you should first point out to Counsel the differences.

Mr. Toulmin, Jr.: There are no differences, except this is the official code. We had a copy printed by all trade magazines, put in as Exhibit No. 72.

The Court: And this is the official——

Mr. Toulmin, Jr.: This is the official copy and it ought to be put in, in our judgment.

[fol. 710] Mr. Ely: We do not question but that the copy you had is all right, and I see no object in the substitution of the two. I do not know anything about this letter and I object to it.

Mr. Toulmin, Jr.: We think this official letter and the official copy transmitted, saying it is on behalf of the Code Authority should be in evidence.

The Court: How does it add anything to your proof, since the other has been received as the copy of the Code?

Mr. Toulmin, Jr.: Well, because up to this date I have never had any admission from the other side that the copy

we have put in is the official copy of the Code. Now, if they are willing to accept that as the official copy of the Code, that is one thing, but up to this date that has never been admitted by them on this record.

The Court: Well——

Mr. Ely: I certainly object to anything. I do not know anything about this paper which Mr. Toulmin offers to put in and about this letter written by Mr. Hanna, which we do not care about, I suppose it is just a transmittal.

Mr. Toulmin, Jr.: It is just a transmittal letter showing it is official.

Mr. Ely: There is more in that letter than this, your Honor.

The Court: The letter is hearsay.

Mr. Ely: I object to it.

The Court: I do not see anything to it except substituting the original for the copy. Of course, if there are [fol. 711] changes in the phraseology, counsel's attention should be called to it.

Mr. Toulmin, Jr.: Yes, your Honor, as far as I know there are no changes, only that it is an official copy.

The Court: If there are no changes, Counsel will not object to it.

Mr. Ely: If it is exactly the same as the one in evidence, why put it in?

The Court: If it is exactly the same, what is the harm?

Mr. Ely: I do not know that it is exactly the same. Suppose Mr. Toulmin lets me have a look at it.

Mr. Toulmin, Jr.: Here it is. (Code handed to Mr. Ely.)

Mr. Toulmin, Jr.: Now, I have two other things, your Honor. I find that in our answer there was pleaded a patent that we overlooked, as to the state of the art, in connection with our answer to the bill of particulars. That patent is the patent to C. W. Zimmer, No. 1,075,747. We would like to give notice that we are going to discuss this in our brief, and to the Court, on the state of the art, and we think it should be marked in evidence, so that we will have a record copy, and we therefore tender it as our Exhibit No. 101.

Mr. Ely: I object to receiving any further patents. We have had no chance to answer this patent. It should have been put in at the time the case was tried.

Mr. Toulmin, Jr.: We can always refer to the state of the art.

Mr. Ely: I object.

[fol. 712] Mr. Toulmin, Jr.: I think we can.

Mr. Ely: I object to any further evidence in this case.

The Court: I assume the Court has been fairly lenient in the order or reception of proofs, at the time of the reception of proofs, but on the other hand, opposing Counsel should have time to examine and to meet the new questions, if any, raised, and, of course, the evidence is closed there.

Mr. Toulmin, Jr.: You understand this was pleaded in the answer.

The Court: I understand, but no proof was made of it on the trial.

Mr. Toulmin, Jr.: Right, your Honor, like a number of patents we put in, we had no special discussion on them. This was on the state of the art and we would like to have it before your Honor so you will see it. We think it is important for you to see it, and we ask that it be received and Mr. Ely can cover it in his brief, as we will cover it in our brief.

Mr. Ely: I object, your Honor.

The Court: The only thing is, if Counsel takes the position, if it is received, that he needs time to meet the introduction of this proof, why, I might have to consider that; that is all.

Mr. Toulmin, Jr.: The fault is mine. I overlooked putting it in, I confess and avoid, if the Court will let me.

The Court: I am only speaking of the other angle of it, whether he should have time to meet any question that he [fol. 713] claims he can meet in connection with that patent.

Mr. Toulmin, Jr.: I am perfectly willing to let him meet it in any way he wishes.

Mr. Ely: I object to it being referred to in the argument and brief. I object to the patent going in without any chance of our rebutting it in the record. It is a most unusual thing to come in after the proceeding is over and try to introduce any matter, whether deliberately left out, when he has presented his case.

Mr. Toulmin, Jr.: That is not right. In a long, two weeks trial, in preparation, if you overlook any matter, it is not a high crime.

The Court: Has it any specific significance?

Mr. Toulmin, Jr.: Yes, your Honor. I think it is a very important patent to have before the court.

Mr. Ely: Then we should have a chance to answer it.

Mr. Toulmin, Jr.: We are willing to give him the chance.

Mr. Ely: I object to that after the case is all over. And it is understood the case is closed, by both parties, to coming in here and trying to put in new stuff and delaying this case, as it has been delayed.

(Then followed colloquy between Court and Counsel the Court finally saying:)

The Court: Well, the point to my mind is that as long as it was not brought up on the trial, of course, where the wit- [fol. 714] nesses would have been examined, by Counsel on this particular patent, do you think that the Court would be justified in receiving it now, without the opportunity to permit an examination of it?

Mr. Toulmin, Sr.: Allow me to say this, in the first place, Mr. Ely is not taken by surprise.

The Court: I presume that is true, but the Court would not have the information he might want to present on it.

Mr. Toulmin, Sr.: He can put in his brief any criticism or attack he wants to make on the patent and we will do the same thing.

Mr. Ely: Anything I put in the brief is not in the record.

Mr. Toulmin, Jr.: We will join him in any attacks he wants to make on this patent.

Mr. Ely: Mr. Toulmin's day is over.

The Court: I do not think we will receive it at this time.

Mr. Toulmin, Jr.: May I have an exception. We omitted through our own oversight, but it was in our answer.

(Zimmer Patent No. 1,075,747 marked Defendants' Exhibit No. 101 for Identification.)

Mr. Toulmin, Jr.: It was in our pleadings, but overlooked in presentation of the case.

The Court: Yes.

Mr. Toulmin, Jr.: Now, just one other thing. I find, as to the record of Exhibit No. 31 of the defendant, Buckeye vs. [fol. 715] Boling, I borrowed this record, and I would like to substitute a photostatic copy of certain pages of the record, as this is the only copy of the record. The particular pages I want to read in here are pages 185 to 305 and then the pages 384 to 388.

Mr. Ely: I object to the receipt of any further evidence.

Mr. Toulmin, Jr.: There is no further evidence.

The Court: The whole record is offered in evidence. Counsel has a right to use that, but I think, as a matter of convenience, if he has photostatic copies——

Mr. Ely: I do not understand that this record was offered in evidence.

Mr. Toulmin, Jr.: It is so marked on its face, Defendants' Exhibit No. 31, with the stenographer's initials.

Mr. Ely: I beg your pardon.

Mr. Toulmin, Jr.: I merely want to do this, to return it.

The Court: I see no objection to photographing the parts he relies on, and if Counsel wants other parts, he can have them.

Mr. Toulmin, Jr.: I will withdraw it then and refer it to Mr. Ely.

Mr. Ely: I desire to offer in evidence in this case the depositions taken on behalf of the plaintiff in Muskogee, in regard to the so-called Hastings prior use, the depositions of L. A. Corey and Richard Shanafelt, and the depositions taken in New Orleans on the same subject-matter, of F. J. [fol. 716] Ward, and the deposition of Mr. Taggart.

Your Honor will recall that at the close of the proceedings here it was agreed that certain extracts of Dr. Smith's testimony, in various previous litigations, in which he had testified as to the development of the invention, might be added, might be inserted in the record, and I think those have been filed here in court, and in case they have, I wish to offer them formally.

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Deposition of Milo B. Hastings

It was stipulated by the parties that in lieu of the originals of all publications to be introduced in evidence as exhibits, photostatic copies may be used, and that said publications were issued and published as of the date appearing thereon, said photostatic copies to be subject to correction if any error appears therein.

Milo Hastings, a witness on behalf of the defendants, testified by deposition at New York, N. Y., Nov. 8 and 9, 1933, as follows, said deposition being offered and received in evidence.

Direct examination.

By Mr. R. A. Greer for Defendants:

I am Milo Hastings, age 49; residence, White Plains Road, Tarrytown, New York. I am a writer, at present. I have had experience in the business or science of incubation [fol. 717] of eggs. I began using incubators as a boy on the farm and had experience with several makes then in use. In the summer of 1902 I secured employment on a large poultry farm in Illinois, and worked there that summer, also using incubators. The same fall I returned to Kansas and entered the Kansas State Agricultural College and was given active and full charge of a flock of poultry maintained by the Kansas Experiment Station. I continued to be in charge of the poultry work at the station during my term in college until graduation in 1906. During this period I also operated several makes of incubators which were then at the station. In the year 1908 and part of 1909 I served as poultry man in the United States Department of Agriculture, and traveled extensively for the Government, visiting poultry plants and various agricultural experiment station operators of incubators and was generally conceded as an expert in this art.

I know of a publication published in this country, called the "Reliable Poultry Journal".

As to the photostatic copy of the issue of April, 1918, of the "Reliable Poultry Journal", Volume 25, No. 22, being photostatic copy of the cover title page and pages 265, 266 and 267 of said journal, an article entitled, "Hastings Mechanical Draft Chick Hatchery", I recognize the article as having been written by me and published on the date mentioned.

Counsel for defendants thereupon offered in evidence the photostatic copy of the April, 1918, issue of the Reliable Poultry Journal and it was Defendants' Exhibit 20.

Mr. Ely: I object to the introduction of the publication as [fol. 718] entirely immaterial, being published sometime subsequent to the filing of the patent in suit, and furthermore as secondary evidence.

Mr. Greer: You mean by "secondary evidence"——

Mr. Ely: Secondary evidence in that it doesn't prove anything with regard to the statements contained therein.

Mr. Greer: You are not objecting to it as secondary evidence on the ground of its being a photostatic copy?

Mr. Ely: No, I am objecting on the ground that the statements contained herein were made sometime after the patent in suit was filed, therefor- it is secondary evidence as to the truth of anything contained in the publication.

In Defendants' Exhibit 20, the April, 1918, issue of the "Reliable Poultry Journal", I mention a book called, "The Dollar Hen." I wrote, "The Dollar Hen", in the year 1909 after leaving the employ of the Department of Agriculture. It was published by the Arcadia Press in New York City.

The book bearing the title, "The Dollar Hen", handed to me is a copy of the book that I wrote, published by the Arcadia Press under the printing date of 1909.

Defendants' Counsel then offered in evidence the book entitled, "The Dollar Hen", and it was agreed that the copy filed of record herein on the injunction motion may be considered as the exhibit now offered in evidence by the defendants. It is marked as Defendants' Exhibit 13. Pages 77 to 107, inclusive, are relied upon.

[fol. 719] In this article in the Reliable Poultry Journal, Defendants' Exhibit 20, I state in substance that during the winter of 1911, I built an incubator in Brooklyn, New York. That incubator was built for Walter B. Davis. This 1911 incubator built and installed in the basement of Mr. Davis' residence on King's Highway on the outskirts of Brooklyn.

Mr. Davis was engaged in the linotyping business in New York City, and as a side interest he operated a poultry farm at his residence in Brooklyn. I met Mr. Davis and interested him in the idea of building an incubator along ideas that I had conceived, the chief distinction of which was using a fan to operate a forced draft to distribute the heat through the incubating chambers.

Mr. Davis employed me at a small salary to come to his poultry farm and reside there and assist him in his poultry work and build such an incubator for him. Mr. Davis had other employment than the operation of this hatchery or poultry farm. Mr. Davis was very busy at the time with his linotype business, and only operated the poultry farm for merely recreation purposes. He had two men on his place, both of them were Negroes, who were doing the labor of caring for these chickens.

I built that incubator beginning in the late months of 1910, and built it early in the winter of 1910 and 1911, for operation in the hatching season of 1911. It was operated by me during the hatching season of 1911. The hatching season is in the spring of the year.. It varies in length according to the purpose of the hatching. In the case of the [fol. 720] work of Mr. Davis' poultry plant, we were incubating only for Mr. Davis and not as a business of hatching for others, and hence it was only necessary to hatch the chickens that Mr. Davis himself wished. The operation there was confined, approximately, to the months of March and April, as I recall.

Mr. Davis was engaged only in operating a poultry plant there. He had quite a large number of hens—I don't remember the number, but I think it was close to a thousand —which he was running on an intensive or largely indoor yarded system, and he was quite enthused with the idea of raising a large number of broilers for sale, but he was not engaged in the business of hatching for others nor in the business of selling baby chicks. His business was then the sale of broilers.

As to the quality and kind of hatch I obtained from this incubator which I built for Mr. Davis in 1911, the quality of any hatch is determined by the hatching quality of eggs. Mr. Davis himself had, for the most part, been recently purchasing from various sources, and in addition he purchased eggs from some poultry farm in New Jersey. He hatched both his own eggs and those that he bought. The hatching quality of those eggs was fair, and we operated in the beginning of the hatching season the incubator that I built and, as a comparison on the side, a Cyphers incubator which Mr. Davis had previously owned. We made this as a comparative test of the hatching of the two makes of incubators. The test resulted in a hatch that indicated that the machine built by me was fully equivalent or slightly better in its hatching abilities than the Cyphers in- [fol. 721] cubator. The hatch, as I remember, was about 59 per cent. of all eggs set. The incubator that I built had a capacity of 6,000 eggs. The Cyphers machine had a capacity of 360.

Over objection by counsel for the plaintiff as calling for a conclusion, the witness said:

From my knowledge and experience in the business, art or science of the incubation of eggs, this incubator, built and installed by me for Mr. Walter B. Davis of Brooklyn, New York, which will hereafter be referred to as the Davis incubator, was a successful incubator, as judged by Mr. Davis and myself, by the comparative hatching test with the Cyphers machines, which was at that time rated as the leading successful incubator in the market.

I have had drawings prepared, illustrating the construction and operation of this 1911 Davis incubator. These drawings are diagrammatic, but accurately show all principles of construction and operation.

Defendants' Counsel offered in evidence the drawings of the 1911 Davis incubator, identified by the witness and the same were marked Defendants' Exhibit 21.

(Objection by plaintiff as not properly proved.)

This Davis incubator illustrated by Defendants' Exhibit 21 consisted of a chamber which was approximately a 6 foot cube; this entire chamber or incubator was insulated with cork insulation. It was entered by a door, which I will mark "A", which led into a small ante-chamber, which I will mark "B", and from this, a door, which I will mark "C", large enough also for a man to enter, [fol. 722] leads into an operating chamber, which I will mark "D"; the incubating chamber proper, which I will mark "E", was accessible from the chamber (D), and consisted of cupboards provided with slides upon which rested the egg trays, which I will mark "F". These egg trays were 40 in number and were arranged in four tiers, each ten trays deep. The trays were square trays, approximately 2 feet square, and slid into chambers approximately 2 feet by 4 feet, the one tray in each slide being behind the other, so that it was necessary to remove the forward tray for pulling out the rear tray. This incubating chamber was entirely open across the top, and likewise entirely open across the bottom. Except for the air leakage between the front edges of the tray, the incubating chamber (E) was closed off from the compartment (D). I now mark as "G", a compartment at one side of this incubating chamber. The compartment marked "G" contained the following devices: A heater which I will mark "H", for burning gas, and a thermostatic device, which

I will mark "I" for controlling temperature by regulation of the gas flame. This chamber also contained a motor-driven fan, which I will mark "J", operated by a motor, which I will mark "K", which was outside of a chamber. The chamber also contained a moisture pan, which I will mark "L". The means of operating this incubator was by heating the incubating chamber and maintaining an equitable temperature throughout that chamber by means of a forced draft or current of air which was blown into the top of the egg chamber and distributed over the area, and this air from the impelling force of the fan behind it, [fol. 723] was then driven down through the incubating chamber into the open space beneath the egg trays. The air was driven through the trays and the eggs of the entire chamber. The air was then drawn by the suction of the fan through the heater, and was returned by the fan into the top of the incubating chamber, making a complete or closed circuit of air through the incubating chamber, the heater and the fan. This circuit of air was continuous and rapid, or a forced circulation of draft, but as it was necessary, in the art of incubation, to provide sufficient exchange of air to furnish oxygen to the living embryos and the hatching chicks, and to eliminate the gases of carbon dioxide, this ventilation or slow change of air was attained in this incubator by the filtering or slow diffusion of air into the chamber containing the heater and the fan, which ventilation was secured through doors or panels, which I will mark "M". These were frames covered with a porous fabric, which I believe was burlap. The further rate of the exchange of this air from the outside was adjusted or regulated by the slight opening or adjustment of the door "A" leading to the outside. The air circuit returning from the egg chamber passed over the moisture pan (L) so that the humidity of the air could be increased and controlled by the evaporation of water in the warm air current as furnished by this moisture pan (L).

These drawings that I have just identified and marked Defendants' Exhibit 21 were made quite recently. I am referring to the Davis hatchery as operated by me in the year 1911. These drawings illustrate that incubator. The arrows appearing on these drawings are meant to show [fol. 724] the circulation of the air currents as impelled by the forced draft of the fan.

In figure 1 of the drawings, Defendants' Exhibit 21, is an opening in the upper right-hand portion immediately under the figure 3 with arrows coming through it. That opening was the exit or outlet opening of the fan (J).

As to there being any separation of the chamber in which the heating element and the fan were located, from the chamber where the egg trays are situated, there is a complete separation at the top of those chambers, except for the closed outlet opening from the blower or fan, but at the bottom of the incubating chamber there is a larger and open free passageway into the chamber containing the heater and the fan. The air circuit as shown in the drawings is from the fan into the incubating chamber, then diffused among the eggs and forced to descend vertically to the lower part of the chamber, from which it is free to then pass into the chamber containing the heater and the fan and moisture pan, and also provided with the openings for ventilation or exchange of oxygen and carbon dioxide. This chamber, therefore, is freely open to the egg chamber, but no air would flow from the chamber back into the egg chamber at the bottom because of the impelling force of the pressure of the blower or fan. The return of the air would be through the heater and through the fan and into the top of the egg chamber.

As to the lines on the drawings in the door marked "C", it was also made a fabric door like the smaller doors marked "M". The purpose of the door (C) was merely to prevent a too rapid exchange of air or drafts when the [fol. 725] door (A) was opened for the attendant to enter to take in eggs or take out chicks. Hence the door (C) could be closed while the door (A) was open. It was made a fabric door merely for the purpose of giving ample ventilation to the chamber (D) in which the attendant would be working. The door (C) and the exchange of air from the outside, and the chamber (D) are of no particular significance in the hatching of eggs, as this was merely the work chamber, but it was not entirely closed off from the incubating chamber, there being cracks between the front of the egg trays, but the active circulation of air, impelled by the fan was as shown by the arrow. Any exchange of air from the incubating compartment with the chamber (D) in which the attendant works was incidental and no part of the plan of incubation.

Figure 1 of Defendants' Exhibit 21 represents what is called a phantom drawing, showing the essential arrangement of the parts of the whole.

Figure 2 is what is called a floor plan. It is a horizontal cross section at a higher level than the floor. The level of this is shown on the phantom drawing and marked "2". I will mark on figure 2 the corresponding parts that I have marked on figure 1, with the same letters as shown in that view.

Figure 3 represents an elevation or side view of the chamber containing fan, heater and moisture pan, of the Davis incubator of 1911.

Figure 4 is a side view or elevation, taken at right angles to that of figure 3 of the same Davis 1911 incubator. I have also similarly marked the drawings referred to as "Fig. 3" [fol. 726] and "Fig. 4". I also have similarly marked a copy of the drawings which have been introduced in evidence as Defendants' Exhibit 21.

Defendants' Counsel then re-offered in evidence over objection by plaintiff the drawings as identified and marked by the witness, as Defendants' Exhibit 21.

Referring to Defendants' Exhibit 21, the heater of this incubator consisted of a gas flame, burning at the base of a pipe, which is enclosed in another and larger pipe so that the gas fumes, combustion, pass through this pipe and to an exit leading outside of the incubator, while the air that is drawn into the fan and circulates in the incubating chamber, is drawn through a larger pipe surrounding this heater pipe. This larger pipe surrounding the heater pipe was about 6 inches in diameter.

The inlet or outlet openings for the air, in the incubating air circuit, were primarily through the controlled or regulatable devices shown at "M", operated in conjunction with the opening of the outside door (A). This was the planned ventilating or air exchange. There would be a supplemental exchange of air to a certain extent through the fabric door (C), and through the incidental passage of air into the incubating chamber from the antechamber (D).

The means provided in this Davis 1911 incubator for supplementing or adding to the moisture of the air is from evaporation of water in the moisture pan (L), but the conserving of moisture in the air would mean the checking of the rate of loss of moisture from that air. In incubation,

in addition to the natural moisture of the fresh air as brought in from the outside air, you would have the further [fol. 727] source of moisture added to it that comes from the evaporation of moisture from the eggs or from hatching chicks, but in addition to these two sources of air moisture, it is considered and was considered good practice, in the art of incubation, at the time of the operation of this Davis hatchery, to provide for added moisture which might be controlled by the operator, according to the apparent needs for greater or less moisture in the incubator as indicated by the rate of loss of moisture, shrinkage of the air cells, or by the appearance of the embryos of the chicks at hatching time.

"L" (Fig. 3) is a moisture pan for evaporation of water in the warm air stream, to add to the moisture as desired. The fan used there was a centrifugal fan of the blower type.

After the end of the hatching season in Brooklyn, I prepared a circular describing this Davis 1911 type of incubator and other matters of poultry development in which I was interested. I printed this circular with particular reference to the promotion of poultry work by means of large incubators or hatcheries, for the Kansas and Oklahoma gas district. My reason for particular interest in the development of the industry in that region was that Kansas was my home state and my brother was a resident of Independence, Kansas.

The publication was used by me in an effort to interest poultry men or others in the development of an incubator hatchery, and related poultry development, and I went, in the summer of 1911, to Kansas, and spent about a week's time at Topeka, Kansas, in the company of Rees V. Hicks, former president of the Poultry Association, who at that [fol. 728] time was editor of a poultry paper published at Topeka, by the name of "Poultry Culture". I also spent time at Independence, Kansas, my brother's residential town, attempting to interest local men there in the same project, and from there went to Muskogee, Oklahoma, with the same idea in mind. I probably circulated a number of these phamphlets at all these points.

As to whether that Davis 1911 incubator was open for observation to the public, or whether anyone ever inspected or saw it there in operation, it was operated for Mr. Davis and his own hatching uses. During the time it was operated, it was shown to a number of my personal acquaint-

ances, and also friends and callers who called upon Mr. Davis.

With reference to the building and installing of an incubator at Muskogee, Oklahoma, in the fall of 1911, I interested, particularly a man by the name of John Lieber. Mr. Lieber was an attorney of the City. He also owned four moving pictures, and was quite a prosperous and leading spirit of the community. He also owned a farm and was generally interested in the development of the poultry industry of his community. He was not an operating poultry man at the time I met him at all. Mr. Lieber employed me to build an incubator or hatchery for him. This work was begun in the late fall of 1911 and the incubator was built in the winter of 1911 and 1912. That incubator was operated by me for Mr. Lieber, as owner, during the hatching season of 1912.

The character of the business done with that incubator was quite different from that of the Davis hatchery, in that [fol. 729] neither Mr. Lieber nor myself owned any poultry farm, and it was our idea to rapidly stimulate the development of the poultry industry in that region of the State, by doing what is known as custom hatching, although we also bought some eggs and sold the chicks hatched therefrom.

The term "custom hatching" means that the operator of the incubator or hatchery solicits eggs from owners for the purpose of hatching the chicks, charging for the service of hatching a fee, which is usually based upon the charge per egg or per chick hatched. That was the character of business chiefly done in that business season of 1912 by this incubator at Muskogee.

The Muskogee incubator, like the Davis incubator, was built in, and the walls attached to an existing building. In this case, the incubator was considerably larger than the Davis machine and occupied most of the space in the building in which it was installed. This building was a low brick building, partly sunken in the ground—a sort of semi-basement. It was owned by Mr. Lieber. It was in the rear of other buildings owned by him, located right near the heart of the business district of Muskogee. The general plan of construction and the principle of operation were quite similar and in accord with those of the Davis incubator, such changes as were made were wholly the matter of expediency in adapting the construction of the building space available and because of the larger capacity of the Musko-

gee incubator. This capacity was rated as 30,000 eggs, and the incubator was consisted of essentially the same number [fol. 730] of chambers and with essentially the same arrangement of parts as in the Davis incubator. The chief distinction was that because of the larger capacity of the Muskogee incubator and the greater distance through which the incubator consisted of essentially the same number of egg trays through which it had to be equitably distributed and circulated, caused me to depart from the construction of the Davis machine in the particular that the air driven from the fan was caused to pass through a rear passageway behind the incubating chamber. This was for the purpose of preventing a cold wall along a brick ground wall, and to more equally distribute the temperature throughout the longer series of hatching compartments. The heater in this case was located in a vertical side chamber which was at the opposite end of the incubating compartments from that of the fan. The separation of the heating member from that of the fan chamber had no particular purpose except that of convenient construction and because of the greater length of the incubating chambers it was thought advisable to place the heat at the further, or what appeared to be the cooler end of the machine.

Aside from the location of this heating arrangement, there was no essential difference in the means of heating the air, between the Muskogee incubator of 1912 and the Davis incubator of 1911.

I have had drawings prepared to illustrate the construction and operation of this Muskogee 1912 incubator. The set of drawings handed me, consisting of two sheets, one sheet marked "Hastings Muskogee Hatchery, 1911-1912, [fol. 731] Fig. 1", and the other sheet marked "Hastings Muskogee Hatchery, 1911-1912, Fig. 2, Fig. 3, Fig. 4 and Fig. 5", correctly represent the construction and operating principles of the Muskogee hatchery of 1911 and 1912 as that hatchery was completed and utilized during the main portion of the hatching season, and as the plant was when I left it. Those drawings have been quite recently prepared.

Counsel for defendants then offered in evidence the drawings identified by the witness, of the Muskogee 1911-1912 incubator, as Defendants' Exhibits 22 and 22-A re-

spectively, Fig. 1 being Defendants' Exhibit 22, and Figs. 2, 3, 4 and 5 being Defendants' Exhibit 22-A.

(Objection by plaintiff's counsel on the ground that the drawings had not been properly proved.)

(Recess taken to 1.30 P. M.)

Fig. 1 of Defendants' Exhibit 22 is a phantom view of the Muskogee 1912 incubator.

Fig. 2 of Defendants' Exhibit 22-A is a horizontal section; Figure 3 is a vertical section shown from the left end of the phantom drawing; Figure 4 is a longitudinal vertical section; and Figure 5 is an end vertical section from the opposite end of that of Figure 3.

I will take these drawings, Defendants' Exhibits 22 and 22-A, and describe in detail the various elements or parts of this Muskogee 1912 incubator illustrated by those drawings and will mark on the drawings the reference letters identifying the various elements and parts shown on [fol. 732] the same. A door entering into the hatchery is shown and marked "A". This leads into an antechamber marked "B". A further door marked "C" leads into a workroom or chamber marked "D". The incubating chambers, of which there are seven, are indicated by the letter "E". The individual trays that slide into these chambers, one of which is marked "F"; a chamber marked "G" contains a blower or fan, which fan is marked "J". At the opposite end of the hatchery is another chamber marked "G-1". This contains a heater marked "H". A thermostat, which I will mark "I" is shown in Figure 1 and Figure 5 only. The blower or fan is marked "J". At the position in the Figure 2 which I have indicated by "K", is a motor which is not shown in drawing, but the belt leading from the fan to the motor is shown. I will mark it "K-1". A moisture pan is marked "L". A door leading to the chamber (G) is marked "M". A passageway behind the incubating compartments, through which the air from the blower passes, is marked "N". A passageway through which the air also passes and is distributed to the seven individual hatching compartments is marked "O".

Referring to Defendants' Exhibit 22, Figure 1, of the Muskogee 1912 incubator, the buttons appearing on the drawing at the top of each of the incubating chambers, there being seven, one of which I will mark "P", are for

the purpose of holding a removable panel or door which was set in front of each chamber, after the eggs were put in, to close the chamber off from the workroom marked "D". The panels or removable doors are shown, and I will mark them "Q". The arrows on all these drawings [fol. 733] indicate the circulation of forced draft current of air impelled by the fan.

Looking at Exhibit 22, Figure 1, of the Muskogee 1912 incubator, the openings at the top of the egg chambers with movable slides, which I will mark "R", are seven in number and lead from the chamber (G) into the seven individual hatching or incubating chambers. The purpose of these openings, and the adjustable slides, is to permit of the distribution of air from the forced draft of the fan to the individual hatching chambers, and the slides are for the purpose of adjusting the flow of the air to each hatching chamber, as operation requires; thus, if a portion of the hatching chambers only are to be used, these slides would be open to those chambers, and other chambers not in use might have the slides closed to prevent the by-passage of air through idle chambers. The further purpose of enclosing the top of the incubating chambers, which was not done in the Davis plant, and was done in the Muskogee plant, is because of the much greater size of the Muskogee plant and the necessity of having some means to equalize the flow of air through the larger number of chambers distributed through a much greater range of space.

Regarding the dimensions of the chamber in which the fan or blower was located, in this Muskogee incubator they were approximately 4 by 5 feet—the horizontal dimensions. The blower forced the air through a partition into which the outlet of the blower was fitted, and the air flow was immediately diverted by a rounded tin partition to reduce the resistance and turn it into the passageway or chamber marked "N". This passageway merely serves as a conduit [fol. 734] for the air, the purpose, as I have previously stated, was to avoid a cold wall and the expense of greater insulation at the back of the hatching chambers.

As to the approximate dimensions of that air chamber and channel marked "N", the channel had the vertical height of the incubating chambers in front, and in the other dimension was quite narrow, being about 8 inches in width and extending the length of the entire plant.

As to the dimensions of the heating chamber which is marked "G-1", that chamber was about 4½ feet in depth, it extended the full height of the incubator, and was quite narrow the other way, there being only room for the air to pass around the heater, which was formed of a 6 inch stovepipe. Provision was made to reach in and adjust and attend the flame of the heater through the front of that chamber. That is indicated in the drawings. The entrance-way consisted of a slender vertical panel which I will mark "S".

With reference to the means provided for separating this heating chamber (G-1) from the egg chambers, the heating chamber was lined with metal, and between this metal and the slide of the adjacent egg chamber, asbestos insulation was provided, which I will mark "T".

The manner and method of the operation of this Muskogee incubator was the same as that of the Davis incubator, in that the distribution of the heat to provide equal temperatures throughout all egg chambers, was carried out by means of the forced draft of air as propelled by the fan and past the heater, and then distributed in a long chamber marked "O" to the seven separate incubating cham- [fol. 735] bers marked "E". In these chambers the air which entered at the top was driven by the forced draft vertically down through the egg trays the same as in the Davis plant, and was returned by a similar open space beneath the trays to the fan, from whence the circuit passed the heater or continued on a complete continuous circuit as in the Davis plant.

The size of the fan or blower indicated in these drawings was that of a Sirocco blower, with an 8-inch outlet. The blower indicated on the drawings which I have described, was used in the Muskogee plant. It was not the first fan or blower that I installed there. In installing this plant I first installed an open blade Davidson exhaust fan which Mr. Lieber had in stock, it having been used as an exhaust fan in some of his moving picture theatres. I found, however, upon trying it out, that the exhaust fan did not have a sufficient pressure blast of air to give a satisfactory circulation to distribute the air through so many hatching chambers, and therefore replaced it with the blower which gave a more forced draft of air with sufficient pressure to overcome the friction imposed in the air circuits.

The manner and method in which this machine, as illustrated in the drawing, was operated where the manner and method that was actually practiced in the Muskogee incubator. The change of fan that I have described made no difference whatever in the circulation of the air through the various passageways and chambers as here shown. The installation of the blower was made because the other fan did not give a sufficient force to operate the machine on [fol. 736] a large scale after friction was introduced into the chambers by the insertion of many eggs, so as soon as we found this out from a trial, we secured the blower, and the blower was used during most of the hatching season, all except some early trial hatches in the beginning of the season. The change was made while the hatchery was in operation but before the main hatching work of the season was under way.

We obtained our source of power for the operation of this fan or blower from a Central current power. The first fan installed was a direct-connected fan, and the blower was a belted fan requiring a separate motor, and to get room for a larger motor and separate fan required some mechanical readjustment in the structural walls of the chamber (G).

The heater, as shown, for heating the air was a gas flame burning at the base of a vertical 6 inch stovepipe, the heater drawing its air or combustion from the channel air circuit of the incubator and exhausting the fumes of combustion, and the air drawn in through the stovepipe which led outside of the incubator.

There were seven egg chambers in this Muskogee incubator. A space and slides were provided for twenty trays. These twenty trays could all be filled with eggs during the incubating period, but the vertical spacing of these trays was only 2⅝ inches, hence when it was desired to bring off a hatch, it was necessary to use the space occupied by two trays for incubating, and the same trays were used, but temporary cardboard siding, which was provided to keep the chicks from falling out, making that tray about 4½ inches in height.

[fol. 737] With that manner of operation the egg capacity of that incubator is rated as follows: The complete space for trays for incubation consists of twenty trays in each of seven compartments, which would give 140 trays. The tray capacity of eggs was 250 eggs, as we rated them; that

would give a total room for 35,000 eggs, but because of the necessary practice of using the space of two trays for hatching purposes, we allowed a loss of 5000 of the full rated egg capacity, and rated the hatching capacity as 30,000.

Going back to Defendants' Exhibit 22, Figure 1, of the Muskogee incubator of 1912, I have marked the pipe of the heater (H). The extension of the heater pipe, which I will mark as "U", is for the purpose of leading the gas fumes of the burning flame outside of the entire hatchery. The pipe passes up through the heating chamber, which is in the incubating air circuit, and then turns and passes overhead through the work chamber (D). That was merely a matter of convenience, and had a further use, that the exhaust heat from the pipe served to take some of the chill off the workroom. The workroom in this incubator was not insulated as the similar workroom in the Davis hatchery, it being larger and the expense of insulation being quite an item, and in this incubator the incubating compartments have panel doors, as I have described, to shut off the incubating chambers more completely than in the Davis machine. Therefore, the chamber (D) was not brought as near the incubating temperature as the Davis hatchery, but the supplemental heating from the conduction and air leakage of the incubating chambers, plus the supplemental heat-[fol. 738] ing from the exhaust pipe of the heater, served to maintain this work chamber at a temperature of about 80 degrees.

At the peak of our hatching season we had the capacity of the Muskogee 1912 incubator so fully in use that on a few occasions we had to hold eggs for a day or two before we had space for them in the incubator. I cannot say that an exact number of 30,000 eggs was in incubation at one time, because we were doing a large amount of custom-hatching, a great deal of it from farmers and small back lot poultry men, who would bring in a few eggs at a time, and in putting these in trays, to avoid mixing lots, we sometimes ran slack trays which might have lowered the full rated capacity somewhat.

That use of it was of a commercial character in the sense that all hatching we were doing was either custom-hatching, which formed by far the bulk of it, or some hatching which we did of eggs that we purchased and the chicks of which we sold.

In the operation of this machine, the egg trays consisted of a frame with a hardware cloth wiremesh bottom, and the eggs were laid loose on their sides in these trays and were turned by hand by rolling the eggs in the tray as was then customary in the incubation practice.

Over objection as calling for a conclusion, the witness testified:

As to what was considered in 1911 and 1912 as a good percentage of hatch in mechanical incubators, I do not think that one can give any set figure as being good hatch. It is purely a matter of phrasing an opinion. The hatching of eggs then, as now, varied widely with the factors of the [fol. 739] quality of the eggs as determined by breeding stock, by the incubation, by the season of the year and many other factors.

The quality of hatches in the Muskogee 1912 incubator were very highly variable, and rated all the way from complete failures of small lots, to back lot winter eggs that were brought in by local poultry men, to excellent hatches that were secured from eggs of a good hatching quality provided by more skilled poultry men. I best recall the hatching percentages of white leghorn eggs that I purchased throughout that hatching season from a man named Gaunt who resided at Benton, Arkansas. I found from an early trial of these eggs that they were good hatching quality, and hence, for purposes of producing chicks for sale, we bought throughout the season an average of two cases a week, and these eggs hatched uniformly well throughout the season, and the hatching percentage never fell, with the Gaunt stock, below 70 per cent. of all eggs purchased.

The operation of this Muskogee 1912 incubator was decidedly open to the public because it was considered by Mr. Lieber and myself as something of an advertising scheme of my method of hatching, and for Mr. Lieber's desire to develop and interest the people in the region, and he therefore advertised the hatchery. I particularly recall that Mr. Lieber had slides made of views of the hatchery which he used in his moving picture houses, with an invitation to the public to come and visit the mammoth incubator. This resulted in our having a great many visitors who were freely admitted to the hatchery, as well as all customers [fol. 740] supplying us with custom-hatching eggs who were invited to come in and see the machine in operation, and

it was fully demonstrated and discussed with any visitors who came.

Over objection by the plaintiff as calling for a conclusion, the witness said:

From my knowledge and experience in this art of incubating eggs, as well as from my knowledge of the actual operation of the Muskogee incubator in 1912, the operation of the incubator was successful. The hatches, as I have stated, varied widely from very poor to very good results, depending on the quality of eggs which were highly variable in that new community, and in which many poultry producers had very little knowledge of the industry.

With reference to the complete failure of some hatches, I remember one instance of a complete failure to hatch any chicks from eggs brought. I remember this particularly well because a breeder, who had a very small number of large black Orpington chickens, which he highly valued, brought some eggs early in the season to hatch, and we failed to get any chicks from them, and I recall that instance because of the particular case that the man valued his stock and was naturally very greatly disappointed. The fact that the incubator at the same time was bringing good hatches from other eggs and continued to do so throughout the season, convinced me that the fault was not in the incubator but in the eggs. The eggs were not hatchable.

There were a number of notices in local and farm papers with regard to building and operating this 1912 Muskogee incubator.

The document handed me is a photostatic copy of "Poul- [fol. 741] try Culture" published at Topeka, Kansas, February, 1912", No. 5. It contains an article which is a description of the plant as I had built it, and which shows in its illustrations, the first hatch which was taken in that plant in the month of January, 1912. The article is prepared and signed by Ralph H. Searle, associate editor of "Poultry Culture", the editor in chief of which was Reese V. Hicks.

Defendants then offered in evidence as Defendants' Exhibit 23, the article identified by the witness as having been published in the February, 1912 issue of the "Poultry Culture".

Defendants' Exhibit 23, contains a photograph on page No. 7, in the center of the article of my workman or assistant who was employed in this hatchery. The photograph of myself is in the lower part. The photograph in the upper righthand corner of the article shows one of the individual incubating compartments with most of the trays removed to show the construction of the compartments, and trays shown in the lower part of the compartment of the Muskogee 1912 incubator.

Upon examining Defendants' Exhibit 23, I am familiar with the article by looking over it now. I recall it essentially as my memory of it then was, and consider it a very fair and accurate description of the 1912 Muskogee plant as then built.

Defendants' counsel then offered in evidence a photostatic copy of the index cover page, and pages 630 and 631 of the November, 1912 issue of the "Popular Mechanics Magazine" as Defendants' Exhibit 24.

The photograph that appears on page 630 of Defendants' Exhibit 24 is my own photograph shown taking off a hatch [fol. 742] of chicks in the Muskogee 1912 plant. On page 630, Defendants' Exhibit 24, in the first line of the article there, mention is made of a 30,000 egg electrical hatchery at Muskogee, Oklahoma. Quite evidently it refers to the hatchery I built and operated there for Mr. Lieber.

There was not any other hatchery in Muskogee at that time, of 30,000 egg capacity.

Referring to Defendants' Exhibit 24, the beginning of this article refers to the general idea of raising chicks by electricity, as interpreted by the writer, and refers, in addition to the use of electricity in operating the fan, and that of the use of electric lights with newly hatched chicks. That has no direct relation to the hatchery or incubator. The latter part of this article is a brief but accurate description of my Muskogee plant.

Defendants' Counsel then offered in evidence a blueprint copy of the July 6, 1912, issue of "Electrical World" as Defendants' Exhibit 25.

In Defendants' Exhibit 25, the 30,000 egg incubator that article mentions is my Muskogee Plant, and the one picture used to illustrate it represents myself. The other picture,

Fig. 2, is a picture of the Davidson exhaust fan which was used at the beginning of the season, in the Muskogee incubator, as I previously described.

Mr. Norman B. Hilcox was associated with the local electrical company in Muskogee, from which we secured our electrical power, and he was greatly interested in this new use for electricity. I knew Mr. Hickox personally.

Counsel for Defendants then offered for identification Defendants' Exhibit 26.

[fol. 743] Mr. Ely: I don't see how he can testify about it, he doesn't know anything about it.

Mr. Greer: I will connect it up later.

Mr. Ely: I object to it. I don't see why you ask Mr. Hastings about it.

Q. Answer the question.

Mr. Ely: I object to the question as obviously improper.

(Question repeated.)

Mr. Ely: I object. Obviously the article speaks for itself unless Mr. Hastings knows something about the article or whatever he is to read there. I object to the question.

On page 1 in this album, which has been marked for identification as Defendants' Exhibit 26, I find a typewritten article describing the 30,000 egg incubator built and operated by me in Muskogee in 1912. I have now read this article and find it to be a very excellent and accurate description of that incubator.

The other document handed to me is another typewritten copy of the same article to which I have just referred. That article gives an accurate description of my Muskogee 1912 incubator as it was built and operated.

Defendants' Counsel then offered the copy of the article on Page 1 of Defendants' Exhibit 26 for Identification, as Defendants' Exhibit 26-A.

(Objection by plaintiff as authorship or source of article not proved.)

[fol. 744] On page 82 of the album marked for identification as Defendants' Exhibit 26, are shown two original photographs taken in my Muskogee 1912 incubator; the one

at the left shows myself handling eggs; the one at the right is a close-up and showing a thermostatic and gas-regulating device.

The two photostatic copies of this page 82 of the album marked for identification as Defendants' Exhibit 26, are photostatic copies of the original photographs on page 82 of the album.

Defendants' Counsel then offered in evidence the photostatic copies of the photographs appearing on page 82 of Defendants' Exhibit 26 for Identification, as Defendants' Exhibit 26-B.

(Objection by plaintiff as not proved.)

Those photographs were taken early in the hatching season—the winter of 1912 in the Muskogee plant at Oklahoma.

Q. Did you state that they were taken in 1912?
A. In my Muskogee 1912 incubator.

On page 83 of this album marked for identification as Defendants' Exhibit 26, there appears a copy of an article from the "Electrical World" of July 6, 1912, and a separate pasted picture of a chicken in a man's hand. That is the original of the article of which a photostatic copy was offered in evidence as Defendants' Exhibit 25. That article, as it appears in the album marked for identification as Defendants' Exhibit 26 refers to the 30,000 egg incubator in Muskogee, Oklahoma, that I built.

The photographs on page 84 of the album, Defendants' Exhibit 26 for identification, the one at the left shows a [fol. 745] photograph of the Davidson exhaust fan in place, as used at the beginning of the operation of my Muskogee incubator; the photograph on the right shows a view of the work chamber, which is marked "D" on the drawings that I submitted. In this photograph, the panel doors are in place in front of all of the egg chambers except one in the center. In this, the panel door is removed and is shown set aside. The photograph shows me placing a tray of eggs in the incubating chamber.

The documents handed me are photostatic copies of the two photographs which I have just described.

Defendants' Counsel then offered in evidence the two photostatic copies identified by the witness, as Defendants' Exhibit 26-C.

(Objection by plaintiff as not properly proved.)

Q. I will ask you to look at the album marked for identification as Defendants' Exhibit 26, page 84 thereof, and the photostatic copies of the two photographs appearing on said page 84, offered in evidence as Defendants' Exhibit 26-C, and I will ask you, further, to take the drawings of the Muskogee 1912 incubator, which have been offered in evidence as Defendants' Exhibits 22 and 22-A, and state whether or not the elements or parts of the Muskogee incubator shown in those photographs are illustrated in those drawings, if so where and in what way, and how they are lettered on the drawings?

A. The photograph showing the fan shows the chamber which, in the drawing, is marked "G", and it also shows on [fol. 746] the floor a moisture pan, which in the drawing is marked "L". The fan shown in the photograph is the one which I have described which was first installed. The drawing shows, in the same chamber (G) a blower which was used to replace the fan which was first installed and which is shown in the photograph.

Q. What as to the other photograph?

A. The other photograph is a photograph of the chamber, which in the drawing is marked "D". It was taken by a camera which was located in or beyond the doorway at "C", and shows the fronts of the incubating compartments with the six of the removable panel doors which in the drawings are marked "Q" in place and the one removed. At the top of these panels in the photograph are the buttons which are indicated in the drawing and marked "P". In the background of the photograph is shown a stovepipe crossing the rear of that chamber, which is the stovepipe or exhaust from the heater which is marked "U" in the drawing.

The figures 2 and 3 appearing in the photographs are numbers that are placed on those doors or panels and above the spaces where they go, merely to indicate which door fits in which panel, as they were individually made and some didn't fit in other places quite, due to roughness in carpenter work.

The little thing indicated immediately above the head of the man taking the tray out, in that photograph was some electrical device that I recall as being used in connection with the operating of the light. It had no part in the control or construction of the incubator itself.

On page 85 of the album, marked for identification as [fol. 747] Defendants' Exhibit 26 appears to be an article from the "Popular Electricity Magazine". It shows illustrations that are made from photographs which were taken of that plant by retouching or redrawing them. In two of these illustrations I appear. I have no personal knowledge of the appearance of this article.

Fig. 2 on page 85 of the album marked for identification as Defendants' Exhibit 26, is an illustration very clearly redrawn from the original photograph which I have previously discussed on page 84 of this same album. The original photograph is a picture made in the 1912 Muskogee incubator and of me, myself.

There is no difference between the illustration shown on that page 85 and the original photograph except that the original photograph is a dim copy, and probably the publisher did not think it would reproduce well as a half-tone, and therefore he has had his local artist in his own office redraw it. He has made no essential changes in the structure of the incubator. He simply used his imagination a little in drawing in the wood frames and constructions of those panels, which are dim, due to over-exposure of the white surface in the original photograph.

It correctly illustrates that portion of the Muskogee 1912 incubator.

The illustration shown under the marking "Fig. 3" in that article is a half-tone of a retouching of the original photograph on page 84, of the fan. It correctly shows the type of fan and its position. The retouching of the photograph or redrawing leaves out some details but it correctly shows the fan.

The illustration, "Fig. 4" in this article, is a similar re- [fol. 748] touching or redrawing from a photograph of one of the incubating chambers in the Muskogee incubator.

Turning to page 86 of the album which has been marked for identification as Defendants' Exhibit 26, the photograph on the lefthand side of that page represents a view of the workroom of the Muskogee incubator; it has been

arranged for purposes of photography, to make a display showing the large amount of eggs that were in incubation in a small space. For this purpose the entire group of panel doors that are placed in front of the chambers have been temporarily removed and are set aside and shown in the rear of the photograph. The egg trays have been intermittently pulled out at various distances. Some of them are in place and some partly out merely for photographic purposes to show the large number of eggs in process of incubation. That photograph was taken in the plant in the midst of the hatching season of 1912. My statement will apply to both photographs, as far as the time of taking.

The photograph on the righthand side is a photograph of an individual egg chamber, with the top group of trays removed, the bottom group in place, in order to show the construction of the chamber and the way the eggs are placed therein.

The document handed to me is a photostatic copy of the two photographs I have just described in the album.

Defendants' Counsel then offered in evidence photostatic copy of the two photographs appearing on page 86 of the album which has been marked for identification as Defendants' Exhibit 26, as Defendant's Exhibit 26-D.

[fol. 749] (Objected to as not properly proved.)

On page 87 of the album marked for identification as Defendants' Exhibit 26, there appears to be a newspaper clipping which I remember as having appeared in a local Muskogee newspaper. It appearped while I was in Muskogee, at sometime in the season of 1912.

Defendants' Counsel then offered in evidence photostatic copies of the article identified by the witness, as Defendants' Exhibit 26-E.

Referring to this article appearing on page 87 of the album marked for identification as Defendants' Exhibit 26, it is a newspaper article, and it commingles statements regarding the incubator that I was then building or operating in Muskogee, with very general statements about incubation and hatcheries and poultry business. Insofar as the statements relate to my incubator, in the main they are accurate. I observe that there are some slight errors. For instance, the egg tray capacity here is stated as 300 eggs.

while we rated these at 250. The egg tray capacity with eggs laid loose is no exact size, and the reporter undoubtedly got the impression we could put more eggs in, or merely made an exaggerated statement of our rated capacity.

Turning to page 88 of the album which has been marked for identification as Defendants' Exhibit 26, the photographs appearing on that page are original photographs taken in my Muskogee incubator in 1912. The one at the left shows a view of the working chamber with one compartment open and myself taking off newly hatched chicks from the tray. In the rear of this is shown the exhaust [fol. 750] heater pipe going through this chamber. The photograph at the right shows one of the incubating chambers, taken from the front, with the door removed and the upper trays removed. A hatch of chicks is shown in the tray left in, in position, and above, dimly seen in the photograph, is the opening with the removable slides with which we regulated the flow of air into the chambers.

Those photographs were taken early in the hatching season of 1912 in my Muskogee incubator.

With regard to the tray shown in the illustration, with me taking the chicks out, that tray shows that cardboard side temporarily tacked in the tray for the purposes of bringing off the hatch. The space that the chicks and this cardboard side occupy, when slid into the compartment, is shown to be that of the space of two trays, the slide of the removed trays shown in the photograph.

The document handed to me is a photostatic copy of the two photographs on page 88, as now appearing in the album. This photostatic copy shows the photographs on alternate sides to which they are now placed in the album.

Defendants' Counsel then offered in evidence the two photostatic copies of page 88 of the album which has been marked for identification as Defendants' Exhibit 26, as Defendants' Exhibit 26-F.

(Objected to by plaintiff as the original had not been proved.)

Turning to page 90 of the album which has been marked [fol. 751] for identification as Defendants' Exhibit 26, the photograph on the left of this page is that of a freak chick which got its head out of the egg and the fuzz dried before

the chick hatched, and also of an older chick. I merely remember this as a picture that was taken of chicks hatched in the Muskogee plant in 1912. The picture on the right shows two full trays of chicks, which I can identify from the construction of the trays as well as from memory of the photographs taken at that time, of being of chicks hatched and in the trays in my Muskogee plant in the season of 1912.

These photographs were taken during the hatching season in Muskogee in 1912. As to what connection those photographs had with my incubator in 1912, they show that the chicks were hatched therefrom and these were merely photographs for publication or use. One of them is a freakish photograph and the other is of a nice hatch of chicks in trays.

The document handed to me is a photostatic copy of the two photographs just described.

Defendants' Counsel then offered in evidence photostatic copies identified by the witness of page 90 of the album marked for identification as Defendants' Exhibit 26, as Defendants' Exhibit 26-G.

(Objection by plaintiff repeated.)

Defendants' Counsel then offered in evidence a book entitled, "The New Egg Farm", by H. H. Stoddard, as Defendants' Exhibit 14, with particular reference to pages 299 to 303 inclusive.

I am very familiar with this book, "The New Egg Farm", Defendants' Exhibit 14, as I owned a copy of [fol. 752] the original edition published in 1899. The copy I now have in hand appears to be a later reprint of the reprint date of 1920, but insofar as my memory serves me from looking through this book, and in particular with reference to the discussion of incubation, it is the same as the book that I owned prior to my own work in incubation.

In both the Davis 1911 incubator and the Muskogee 1912 incubator the eggs were turned by the method of rolling the eggs in the tray. This was usually accomplished by removing a few rows of eggs from one edge of the tray and transferring them to the other, and pushing the eggs over, causing them to roll or turn, which was the prevailing practice in the art of incubation at that time.

As to the opinion by Judge Westenhaver, in the United States District Court, in the case of Buckeye Incubator Company, et al. vs. Wolff, reported in 291 Federal Reporter, Page 253, where Judge Westenhaver, referring to an article that was introduced in evidence in that case, purporting to describe my incubator, used the following language: "One article says that 5,000 eggs in superimposed trays are placed in one chamber 2 by 4 by 4 feet, which is manifestly impracticable." The number of eggs stated to be in the compartment of the dimension of 2 by 4 by 4, was based upon the rated capacity of the Muskogee incubator, as being 250 eggs in twenty trays, which was the capacity as used in incubation if no chicks were being hatched in such compartment at the time. The actual number of eggs that can be placed in a tray depends upon the size of the [fol. 753] eggs and the tightness or arrangement with which they are packed. When large eggs are laid loose on their side and not closely packed by a definite arrangement, the tray does not hold as many. With smaller eggs carefully packed in, many more eggs can be placed in a given area. The rating of 250 is merely an arbitrary rating in round numbers, it is an underrating of the maximum number of eggs that might be placed in such a tray by more careful packing. As evidence that this is not an over-statement of egg capacity of such a tray, I would call attention to the fact that in an ordinary commercial egg case, the filler used is less than 1 foot in each direction, and the space contains 36 eggs, which when the pasteboard filler is removed, will turn on their sides and easily accommodate themselves in the egg case space. This use of an egg case shows that less than 1 square foot of area will maintain and allow for the 36 eggs. The 2 by 4 feet egg tray contains 8 square feet, hence on the egg case arrangement, would contain 8 times 36 eggs, which is 288 eggs. Therefore, the Judge is wrong in stating that such a chamber would not accommodate the eggs. It would accommodate that number readily, as shown, and as used in practice in the Muskogee incubator. The Davis machine used a higher tray, the wall of which was sufficient to accommodate the chicks at hatching time, and hence in a given space would not have provided for as many eggs.

Regarding Judge Westenhaver's statement in this same opinion, in reference to an article appearing in "Poultry

Culture": "Something is said about driving the air from top to bottom by a centrifugal fan, but the position and location of the fan with respect to the eggs and the direc- [fol. 754] tion of the drafts are not defined, much less is any provision disclosed for driving the air currents in a defined channel or for removing the foul air and supplying fresh air. All that can be said is that heated air is to be forced into a chamber filled with eggs, permitted to go where it pleases, and escape by some undescribed method of ventilation." The actual use in both the Davis and the Muskogee incubators involved the use of a fan which drove the air in a definite enclosed and complete circuit. The air currents in both incubators are directed to flow in definite channels including passage through the egg chambers, in both incubators, this passage being from the top of the chambers down through the trays of eggs to the bottom. The distinctions in the method of this air circuit in the two machines I have already called attention to, but they relate to the passage of air outside of the incubating chambers in relation to the fan and heater and passageways. The circuit of air flow through the chambers, through a heating chamber and through the fan, was the same in both incubators and was a definite closed circuit. The idea that the air was blown into the chamber and allowed to escape where it would, is incorrect. By far the major portion of such air flow was in both cases returned and recirculated through and by the fans. The exception to this is the necessary relatively small fraction of the air flow or exchange of air which in both incubators was provided for to allow of new oxygen and the escape of carbon dioxide gases.

On May 3, 1911, I filed application, Serial No. 624885, in the United States Patent Office and the photostatic copy [fol. 755] handed me is a copy of this application and shows my signature thereon. This application became abandoned.

Judge Westenhaver, in his opinion, referring to this application and the specifications thereof, says the following: "No provision is made for removing foul air, or supplying fresh air, or conserving moisture. No well defined channels for the circulation of air are provided." With regard to the actual incubator, both the Davis incubator and the Muskogee incubator, in regard to the provisions

made for the introduction of fresh air and the escape of foul air, I will say this: That the necessity of such exchange of air, for purposes of ventilation in incubation, was a well-known principle in the art. The embryos of chicks are living animals, and require oxygen, and breathe as do other animals, and as a matter of common knowledge and common sense, their life could not be maintained without suitable ventilation or oxygen supply. Therefore, as an experienced operator of incubators, I could not possibly have conceived or attempted to incubate in a chamber in which ventilation provision was not made. Ventilation provision was made, as I have previously described, in both the Davis and the Muskogee hatcheries. In regard to the second idea involved in the Judge's statement, which relates to the flow of air in directed channels: In both the Davis and the Muskogee incubators, this flow of air, by means of a forced draft, impelled by a fan was very definite, as I have described, being in a complete circuit through the fan, the heating chamber and the incubating chambers. In the case of Buckeye Incubator Company and Samuel B. Smith, plaintiffs v. Elden C. Cooley, defendant, [fol. 756] in the United States District Court for the District of New Jersey, Judge Bodine says the following: "Hastings never seems to have procured results. He built one sort of an incubator and the next year changed to another. The following year he built another kind of incubator and so on."

The statement regarding a change of method or construction of incubators, as illustrated by the Davis plant, as built and operated in the season of 1910 and 1911, the Muskogee plant built the following season, does not apply to any essential principle of incubation or the methods of air circulation by a fan in direct currents through the incubating chambers. Any change in construction of the incubator at Muskogee, as compared with the Davis incubator, was merely mechanical expediency because of the larger plant and the necessity of distributing the air flow over a larger number of incubating chambers, and there was no departure from the essential and distinctive principles of incubation by a forced draft which I had conceived as original ideas before building the first machine, and which were used and applied in a larger machine at Muskogee.

In this opinion, Judge Bodine also states: "Hastings undoubtedly had a greater measure of success but it seems probable that he never had, in combination with a fan, restricted openings for foul air, eggs in different layers in a closed chamber, and the currents of heated air so created as to diffuse and maintain the air throughout the egg chamber at substantially the same temperature, so that the units of heat were carried from the eggs in the more ad- [fol. 757] vanced stages of incubation to those in the less advanced stage."

The facts stated in that opinion would fully describe the construction and usage of both the Davis and the Muskogee machine, with the exception of the last clause which does not relate to the construction of the machine or the air-directed currents, but merely to the place that eggs would be placed in the chambers. The elements he stated do correctly state the elements of operation, except the last one to which I take exception. He correctly stated what I did have. He states that I never had them. I state that I did have them.

In the opinion of the Circuit Court of Appeals for the Third Circuit, in the case of Buckeye Incubator Company, et al. v. Cooley, reported in 17 Federal, Second Series, page 453, the opinion by Circuit Judge Woolley, Judge Woolley uses the following language with respect to the Davis incubator of 1911, the Hastings' application for a patent of 1911, and the Hastings Muskogee Hatchery in 1911 and 1912, and the Hastings Port O'Connor hatchery in 1912: "More important still, there was no arrangement for establishing and regulating currents of heated air, and similarly no provision for obtaining uniformity of temperature other than that initially provided by the heating means. Moreover, it should be noted that the heated air, like the wind; would go where it listeth and, accordingly, it acted as it pleased. The result was negative and, judging from what happened to the hatcheries, it was not successful."

The statement as applying to the Davis and Muskogee hatcheries, which I have described, that the air currents [fol. 758] were not definitely directed, and the "air going where it listeth" is incorrect, because in both of these plants, as described and illustrated by drawings I have discussed, the air current was a fan-driven current and in a complete circuit, returning to the fan. Therefore, it must

have been a definite and directed current, and was. The maintaining of uniformity of temperature in incubation can apply to two ideas: One is regulating the temperature, which is done by means of thermostatic control upon the gas flow as a source of heat, used in both the Davis and Muskogee incubators—an essential principle of incubation as recognized in the art. The further element that might be meant by the phrase, "Maintaining uniformity of temperature" would refer to a space distribution of temperature throughout various parts of the incubating chamber or chambers. In both the Davis and the Muskogee incubators, this maintaining of uniformity of temperature in space, and particularly in different vertical heights, was maintained by the forced draft of air from the fan. In both the Davis and the Muskogee incubators the air through the incubating chamber was driven by a fan and was an enclosed or complete circuit, returning to the fan, and, therefore, the air did not go where it listeth but where the fan impelled it.

Q. The Judge states that the results obtained was negative and that judging from what happened to the hatcheries it was not successful. What have you to say as to that?

Mr. Ely: I object to that. There has been a clear finding of fact by the courts as to what Hastings did.

[fol. 759] Mr. Greer: Which findings of fact we are undertaking to establish were erroneous.

The Judges' opinion that the results were negative seems to me to have no meaning, since both the incubators hatched successfully, the success of the hatches depending upon the quality of the eggs, as with other incubators. The conclusion that the Judge has derived, that the operation of the incubator was unsucessful, is evidently from the fact that I did not continue to operate the machines. I built the machine for Mr. Davis. He owned the machine. I operated it the first season employed by him to do so. There was not sufficient work there on his poultry farm to justify his retaining my services and, therefore, I left upon completion of that hatching season. In Muskogee, I built the machine for Mr. Lieber and was paid to do so and to operate it. The Muskogee machine engaged in custom-hatching. With my own youthful enthusiasm to do a big busi-

ness quickly, and Mr. Lieber's desire to promulgate the poultry industry, we offered to do custom-hatching at a very low rate. This was a commercial mistake which resulted in shewing no profits from the season's work, because the miscellaneous expenses of operation and labor were greater than anticipated, but the failure of the hatchery to return a profit was not based upon the failure of the incubator to hatch eggs.

I did not build either incubator to sell. I was employed to build and operate both incubators for the individuals for whom I built them, and they were operated for the [fol. 760] purposes that I have described, and not to sell these machines.

The report of the Master in Chancery in the United States District Court for the District of Oregon, in the case of the Buckeye Incubator Company and Samuel B. Smith, plaintiff v. Archie E. Stone, defendant, used the following language with respect to my incubators: "In the first device, according to the testimony of S. J. Ward, not over 5 per cent. of the fertile eggs hatched. By means of the latter device, 40 to 50 per cent. of the fertile eggs hatched, but the hatchery was not a success, and Hastings did not discover any means to overcome the defects which were inherent in the apparatus."

The statement made refers to one S. J. Ward. I do not remember knowing any man by the name of S. J. Ward. It also refers to this Mr. Ward giving an opinion about a first and second incubator, which I presume refers to the Davis and the Muskogee machines. If so, there is an error, because I am positive that no Mr. S. J. Ward or any other person saw both machines in operation or was familiar with them. I know and would remember all of those who saw the Davis machine, as there were only a few in number and were personal friends of Mr. Davis and myself. In Oklahoma we were doing custom-hatching and had a large number of patrons, a large number of visitors, and I obviously would not remember a very small percentage of people that would have seen that incubator. Mr. Ward might have been among those, I don't know.

The statement as to not over 5 per cent. of fertile eggs hatching in the first machine is erroneous. The concluding [fol. 761] part of the statement that "Hastings did not discover any means to overcome the defects which were in-

herent in the apparatus", I don't know what defects he refers to. Both machines hatched successfully.

The Master's report continues: "In fact, Hastings asked Mr. Ward, 'Why don't this thing hatch', to which the witness answered, 'Milo, I don't know unless it is the acid or effect of the paper that you are using to line it'."

I have no memory of making such a statement and do not believe that I would have made such a statement. Neither do I know, in either plant, what could have been meant by the paper which I used to line it. The Davis plant was lined with insulating cork, and the Muskogee plant was matched white-washed lumber. I might have made a statement to some disgruntled customer whose eggs did not hatch: "Why don't these eggs hatch", but I would not have made a statement "Why don't this machine hatch", because at all times of the season we were getting successful hatches from good eggs in the Muskogee plant —also in the Davis plant.

The general plan of operation in the Davis machine was to place the eggs, when first put in the incubator, in the upper tray levels, and to move them down in order to have the hatching occur in the lower trays. This method of operation had no significance in my mind in regard to the successful incubation of the eggs, but was merely a matter of expediency, because open-mesh trays were used, and chicks at hatching time give off a good deal of litter and befouling matter, which it is not desirable to have dropping down on other eggs. In the Muskogee plant the same general [fol. 762] method of placing the eggs, when first brought to the machine, in the higher levels and hatching the chicks off in trays placed at the bottoms of the compartments, was user, but in the Muskogee machine, because of the much larger capacity with which it was operated and the larger number of trays, it was found that if a large number of trays of eggs in the later stages of incubation, when they give off considerable animal heat, were left placed in juxtaposition, that they were inclined to overheat, due to the interradiation of heat from these eggs to others adjacent. Therefore, we used the method of introducing trays of newer or younger eggs, as we call them, in between the trays of older eggs, to reduce this heating tendency and to equalize the temperature of the eggs at different stages of incubation, but using the method of hatching the chicks out in the bottom trays as in the previous machine.

The difference I have spoken of was that of inter-spacing eggs of different ages in the Muskogee machine, merely because of the larger number of eggs and the greater crowding of capacity of the machine. There is no absolute fixed practice. The eggs would incubate in any convenient place in the machine, because of the heating tendency of a large number of trays of advanced eggs when placed together.

As to my abandoned application 624,885, I made one appeal on the application and was told by my attorneys—that is one appeal from the first examiner—I believe a Board of Examiners—and was told by my attorneys at the time that the application had been rejected, and at that time which was after the operation of both of the incubators that I [fol. 763] have described, I was in financial hard straits, and discouraged with my work, and lacked funds to take an appeal to the Higher Court, and therefore assumed that patent claims having been rejected, it was not considered allowable, and did not prosecute it before a higher appeal.

The album, offered for identification as Defendants' Exhibit 26, is delivered to counsel for the plaintiff for inspection during the adjournment, until Thursday morning, to be redelivered at the adjourned session.

Recess taken to 9.30 A. M. Thursday morning, November 9, 1933.

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Deposition of Mr. Milo Hasting was continued pursuant to adjournment, at 9.30 A. M. Thursday, November 9, 1933.

Further direct examination.

By Mr. Greer:

Over objection by plaintiff as calling for hearsay evidence, the witness testified:

After I left the Davis poultry farm in Brooklyn, New York, at the conclusion of the 1911 hatching season, Mr. Davis continued to reside at that place, and as I understood from later information from him, he conducted some further poultry operations there for a comparatively brief time, but Mr. Davis was a man with many and versatile interests, and in addition to his regular business as a linotype business, he became interested, the season after I left,

[fol. 764] in aviation, and purchased a Wright plane, and I understood from him that he became involved financially with his aviation interests so that he lost heavily, and perhaps within the next year or two lost control of his business and gave up his Brooklyn residence and closed out his poultry work at that point.

The incubator which I built and installed at the Davis poultry farm, was not capable of being removed without tearing it down or destroying it. The incubator was built in a room in a basement or residence, the only door into the room being an ordinary sized door. The incubator was built in place and attached to the ceiling. The insulation of the top of the incubating chamber was nailed directly to the ceiling beams of the basement of the residence. It would be utterly impossible to have removed the incubator from the building without completely demolishing it.

I operated the Muskogee incubator during the active hatching season of 1912. I left there in the month of May. We still had a few eggs in the machine, but we were taking on no new business, and my assistant was employed by Mr. Lieber to continue to run those eggs out. I left Muskogee, having no further employment there, and the hatching season was over, and I had made no arrangements for other employment and I went from Muskogee to Petaluma, California, the well-known poultry center, with a view of interesting others in the construction of similar hatcheries, with which I was unsuccessful.

With reference to this Muskogee 1912 incubator, the Sirocco blower installed in it was a standard 8 inch blower—[fol. 765] 8 inch outlet. I would not be able to testify exactly as to the revolutions per minute at which it was run, but I would have operated it at the recommended speed, which for a blower of that size would be from 600 to 800 revolutions per minute.

Defendants' Counsel then offered in evidence as Defendants' Exhibit 27, a book published in London, England, in 1750, entitled "The Art of Hatching and Bringing up Domestick Fowls of all kinds at any time of the year" by M. de Reaumur of the Royal Academy of Sciences at Paris, with particular reference to the following pages: Pages 1; 2 (lines 1 to 13); 3 (lines 5 to end); 4; 5 (lines 1 and lines 17 to 27); 6 (last paragraph); 7 (lines 1 to 2); 9 (lines 3 to 18);

13 (lines 16 to 22 and last paragraph); 14 (lines 5 to 17); 15 (all except last seven lines); 16 (lines 18 to 22); 17 (lines 8 to 26); 18 (lines 19 to 22); 19 (lines 21 to 35); 20 (lines 5 to 16); 22 (lines 4 to 6 and from line 11 to end); 23 (lines 1 to 5 and 9 to 21); 35 (last paragraph); 36 (first six lines); 47 (first full paragraph and plate opposite page 47, marked "Plate 1"); page 47 (first full paragraph); 48 (line 12 to end and also opposite plate marked "Plate 2"); 49; 50, and the opposite plate marked "Plate 3"; 51 and the opposite plate marked "Plate 4"; 52, 53; 54, and the plate marked "Plate 5"; 61 (lines 7 to 18); 71 (lines 12 to 17); 116 (lines 16 to 23); 122 (lines 12 to 24); 130 (lines 10 to 29); 146 (line 29 to end); 147, and the opposite plate marked "Plate 7"; 148; 149; 152 (last paragraph); 153 (lines 1 to 24); 154 (lines 13 to 18); 157 (lines 4 to 21); 158 (lines 20 to 27); 184 (last paragraph); 185 (lines 1 to 12); 187 (lines 10 to [fol. 766] 25); 190 (last five lines); 212 (lines 23 to end, and also opposite plate marked "Plate 8"); 213; 214; and 215.

Cross-examination.

By Mr. A. L. Ely:

I was born in 1884. In addition to the publications which were offered in evidence on behalf of the defendants yesterday, I composed and published a pamphlet called "A Million Egg Incubator", portions of which are reproduced in the record in the Cooley case at pages 251 to 256, being Defendants' Exhibit D-C. That is a reproduction from a pamphlet, which was spoken of in my testimony yesterday. I furnished the material, or much of the material, for the article in the "Poultry Culture", published in February, 1912, a reproduction of which was Defendants' Exhibit D-F in the Cooley record. I supplied information on which this article is based. I supplied the photographs to the publisher.

As to the article in the Boston Sunday Globe of November 10, 1912, which is Defendants' Exhibit D-G in the Cooley record, I did not know the writer of this article. The photograph of myself, and the one view showing my plant which I built in Muskogee, were supplied by me, and the information in the article was probably supplied by me in correspondence, my memory being that this article was written by a man in St. Louis, and first appeared in the Globe-

Democrat of that City, from which it was obviously syndicated, or also sold to the Boston Globe.

I find the article contains information quoted from me. The article contains direct quotations credited to me. They were probably either from other writings published or from [fol. 767] correspondence with the writer of the article. I remember corresponding with a writer in St. Louis, and that is all the memory I have of that article—a newspaper man in St. Louis.

The article in the "Technical World" of April, 1913, which is Defendants' Exhibit D-I in Cooley record, page 302, is signed by George F. Paul, and contains two photographs which I undoubtedly furnished. I had a fairly large correspondence at that time with people interested in incubation and poultry work, and I have no direct memory of furnishing this particular information, but I have reason to believe that I did, by correspondence or from previous publications—clippings.

I wrote an article in the "Country Gentleman". It appeared August 10, 1918, called "Coming—the Roosterless Farm" which is Defendants' Exhibit D-L in the Cooley record, pages 305 and 306.

As to the other articles which were referred to by the defendants yesterday, the article in the "Electrical World", "Popular Mechanics" and "Popular Electricity Magazine", I did not write any of those articles, and it is my impression, I think, of all the three articles—at least some of those were either written or furnished to other writers by Mr. Hickox, whose scrapbook came into evidence yesterday. I am not positive of the authorship of those articles.

The booklet entitled "The Dollar Hen" was written by me before any attempt had been made to construct the mammoth incubator, according to my ideas. It was in the nature of an imaginary incubator, rather than an account of an actual incubator that was in existence at that time. [fol. 768] As to whether I got the basis for my ideas on incubation from one Madison Cooper, a refrigerating and ventilating engineer, my study of the art of refrigeration, in connection with my employment in the United States Department of Agriculture, led me into a knowledge of Mr. Cooper's method of using a fan circulation of air for the purposes of equalizing temperature in refrigeration. I

adapted that idea to incubation. I did not get the idea of applying the method of incubation from Mr. Cooper—that was my idea, to which I give Mr. Cooper's work in refrigeration the credit of stimulating the thought of the application to incubation. I had not seen any of Mr. Cooper's refrigeration apparatus. I had read an account of Mr. Cooper's method, and I also visited Mr. Cooper, with a view of interesting him as an engineer, in working with him on making this adaptation to incubation. That was before I wrote the book entitled "The Dollar Hen". I think I was still in the Department of Agriculture. I think that was late in the year 1908 when I visited Mr. Cooper.

I believe Mr. Cooper's refrigerating apparatus consisted, generally, of a room with a perforated diaphragm above and below the room, through which the air was circulated, a diaphragm both above and below, with small openings —numerous small openings—leading into the room. That is my memory of drawings in Mr. Cooper's articles or book —I believe it was a book.

It occurred to me, while considering this method of refrigeration, that the problems of refrigeration and the [fol. 769] problems of incubation were very similar, in fact we might say identical, and I believe I so wrote in "The Dollar Hen" I did so testify in the Cooley case.

As to whether Judge Westenhaver was correct in the Wolff case, when he said that "The Dollar Hen" article "merely describes a process for maintaining temperature in cold storage and suggests how it may be applied in a hatchery", he is correct in that being the essence of germination of my idea of describing and equalizing the stratification of temperature in a room by means of a forced draft from a fan. He is correct when he says the article "Merely describes a process for maintaining temperature in cold storage and suggests how it may be applied in a hatchery". He is correct when he says in the same opinion "It does not purport to describe an apparatus or ever to have been put to any use".

**Q. And substantially the same thing is said in the Boston Sunday Globe of November 10, 1912, where it says: "The application of these same principles of engineering to incubation seems so easy that Mr. Hastings supposed others would have no trouble in seeing the thing as he did". That is a correct statement, isn't it, in the Boston Sunday Globe article?**

A. That is the conclusion drawn by the writer. He may have derived that from correspondence with me or from reading "The Dollar Hen", I do not know.

Q. Isn't that a correct statement of the situation—the quotation that I have made?

A. The statement of my opinion, as expressed in "The Dollar Hen", was that the adaptation of the forced draft fan system of eqnalizing temperature, used by Cooper in [fol. 770] cold storage, would apply to incubation. I was under the impression that the application of the device and method to incubation constituted an invention. When I applied for a patent, I had cited, as reasons for the patent not being granted—was that there was no invention involved in such an adaptation, which is one of the reasons that I abandoned that patent.

Q. Just a minute—you are not answering my question. What I am asking is whether this statement emanated from you: "The application of these principles of engineering to incubation seems so easy that Mr. Hastings supposed others would have no trouble in seeing the thing as he did"—did not that statement originate from you?

A. It is not a direct quotation, and I have no memory of writing that exact statement, but my statements in "The Dollar Hen", with the testimony that I just gave, do substantiate that general conclusion. That general conclusion is correct.

Defendants' Exhibits 21 and 22 and 22-A were made by a draftsman employed by the attorneys for the defense, from information supplied by me, and the drawings were slightly corrected after being shown to me. These drawings were made in the office of Toulmin & Toulmin, so far as I know. I don't know when. I did not make them. I first saw these drawings about a week ago. They were mailed to me. I was not present when these drawings were made. They were made from information supplied by me, also using drawings in the Cooley case record, which has been referred to.

The basis of the drawing of the Davis hatchery was the [fol. 771] drawing which was introduced in the Cooley record as Defendants' Exhibit D-D. Slight changes have been made. The drawings made in the Cooley record were made in similar fashion, and were not shown to me and given the opportunity to make any alterations or corrections, as

the drawings in this case were, so any slight differences in those two sets of drawings are due to my correction of the latter drawings, having had opportunity to correct them. I testified in the Cooley case from this drawing, Defendants' Exhibit D-D. I testified that that drawing (Defendants' Exhibit D-D) was a correct diagrammatic drawing, showing the principles of operation of the Davis hatchery.

The same statement I just made in regard to the Davis drawing applies to the drawings of the Muskogee hatchery, which were Defendants' Exhibits D-J in the Cooley record. The essential principles of air circulation are correctly shown in both drawings. I testified that the drawing in Defendants' Exhibit D-J in the Cooley case correctly showed the Muskogee hatchery as a diagrammatic drawing showing the essential principles of operation. I testified in the Cooley case that the drawing was correct, qualified by the phrase that I gave—a diagrammatic drawing showing the principles of operation. They were correct drawings of the Muskogee hatchery, with my qualifying phrase.

I did not make any corrections of the drawings of the Muskogee hatchery when I was on the stand in the Cooley case. I appeared in person and testified before Judge Bodine in the Cooley case. As to testifying for several days, both with regard to the prior uses claimed, and also as an [fol. 772] expert, I don't remember how long I testified, but you have the record.

Taking Defendants' Exhibit 21, which is the drawing of the Davis hatchery prepared by Toulmin and Toulmin, and as to the space that has been marked with a question mark, shown in the partition between the chambers "G" and "E", at the top of the partition between the chambers "G" and "E". There is nothing represented there except the opening or outlet from the fan into this chamber. The long narrow opening which is marked with the question marks has no significance, as I understand. I don't know why it is there. The arrow shows the entrance of the air from the fan. There was no opening across that partition as is shown in the drawing, except from the fan. As shown in the Cooley case drawings, there appears to be a long opening, and the fan appears merely to be driving the air through this opening, but the fan is not shown as set in the wall—ceiling or wall—against a return flow of air into that chamber, which is an error that has been corrected in the drawings now offered in this case. That is to say, the

drawing of the Davis hatchery in the Cooley record shows a fan discharging upwardly into the fan chamber, in the general direction of the opening, whereas in the drawing that was submitted yesterday and prepared in Toulmin & Toulmin's office, the fan is shown with a long outlet which discharges directly into the chamber through that opening. I don't know whether I called attention in the record in the Cooley case, when testifying, to the erroneous showing of the fan. I don't remember. That change has been made by me from recollection. I had no drawing or anything [fol. 773] of that kind on which I based my showing of the Davis hatchery, either in the Cooley case or in this case. It was purely from recollection. The drawing in the Cooley case was made just shortly before the trial in the Cooley case. The drawing in this case was made just shortly before this hearing.

I had nothing whatever on which to base the drawings or my instructions to the draftsman except my recollection, reenforced by the knowledge that the air circuit was a closed circuit, and that an opening, which the draftsman in the Cooley case drawing left there, would have made the incubator inoperative by the principle upon which I was operating, which is a closed circuit of air through the chambers.

Q. What I am asking is: Whether you had, when either of these drawings were prepared, any memorandum or drawings or anything that was contemporaneous with the Davis hatchery, on which you based the drawings—did you have any such thing as that?

A. I had no drawings, I had my memory reinforced by my published statements of the principle and method of operation of the air in a forced draft enclosed circuit, as I have described it in this testimony.

Q. Then your testimony is that these drawings are made entirely from your recollection?

A. That is correct.

Regarding this long opening in both the Cooley record and the present Exhibit 21, I noticed it being there in the Cooley case record, and called the attention of the attorney in that record to the inaccuracy of the drawing, but his statement was that the drawing was diagrammatic and merely for the basis of testimony, and that the drawing [fol. 774] did not purport to show accuracy in all details

but only accuracy in the principle of the circulation, and were working drawings from which I could illustrate my testimony in describing the method of operation of the machine.

As to the opening in the partition between the chambers "G" and "E" extending substantially the width of the chamber, there are lines here that quite obviously were taken by the draftsman from the Cooley case drawings, but the opening from the fan in the drawings submitted in this case is very clearly marked off from the other lines, and the arrows indicate that the air flow comes exclusively from the fan.

Q. I am not talking about the discharge opening from the fan. I am talking about that opening clear across the partition?

A. What do you want to know about it?

Q. What I want to know is whether you called the attention of Toulmin & Toulmin to the fact that——

A. I did not, I overlooked it.

The witness resumed: I noticed that the fan was correctly shown as having an otherwise sealed passageway into this partition so that the fan draws the air into the partition, the arrows of which show this air flow. I did not observe these lines in this drawing as having any meaning. The same thing is not true in the Cooley record. In the Cooley record it is quite obvious that the fan, as shown, is not having its outlet set into the partition, it is set behind the partition, only driving the air towards it.

The same opening appears in the partition between the chambers "G" and "E" in the Cooley record.

Q. And you testified with regard to these drawings in [fol. 775] the Cooley record, and didn't call the Court's attention, in the Cooley case, to the fact that that was a mistake?

A. I do not remember.

Q. You didn't call Toulmin & Toulmin's attention to the fact that that was a mistake?

A. I did not observe it on the Toulmin drawings.

Q. As a matter of fact, was there such an opening in the partition?

A. There was not.

Q. And that is wrong?

A. That detailed drawing is wrong.

Q. And this discharge opening for the fan was made in the drawings which were just prepared within the last two weeks.

A. It was.

Q. And the drawing which you prepared in 1928 showed the other arrangement?

A. It did. The testimony in the Cooley record—testified correctly it was air flow.

Q. Did you not testify in the Cooley case, in answer to cross question 83, page 107, in answer to the question: "Q. When did you, in fact, reproduce or make these drawings? A. Within the last two—or three or four months."

A. Yes.

Q. Then you did prepare the drawings in the Cooley case—you so testified in the Cooley case. Do you want to look at your testimony?

A. (Referring to same.) I testified that I reproduced these drawings from photographs, my memory, and some slight points recalled by talking to Mr. Walter B. Davis, the man for whom it was built. By that testimony I meant that I supplied the information to a draftsman who made the drawings, not that I wielded the pen.

Q. You state then that your testimony at this point in the Cooley record is in error. Do you deny that you, in fact, reproduced those drawings in the Cooley case, when you testified that you did, in that case?

[fol. 776] A. I did not intend to indicate the meaning that I was the draftsman, but that I was the man responsible for giving the information from which the draftsman made the drawings.

Q. Then, you gave the information for the Cooley drawings, is that correct?

A. I did.

This Davis hatchery was built in the winter season of 1910 and 1911. It was completed probably in midwinter—February or early March, 1911. I don't remember the exact date. I operated it personally through the active season until Mr. Davis had as many chicks as he could handle. I left Brooklyn at the end of that hatching season, probably May, I don't remember the exact date. I don't

know whether I left the last of April or the first of May. I do not know the day I left. I do not deny that I left about the first of May. I cannot give any better information on that. I believe the hatching season was still going on when I left. I think Mr. Davis' man Miller operated the machine at that time.

Q. The fact of the matter is you know you left while the hatching season was still on—while they were still hatching there in Brooklyn, isn't that true?

A. No, I have no detailed memory of when I left. I know where I went to reside when I left, it was here in New York City, and I quite possibly continued to go out to Mr. Davis' plant, as I did, for some time when working with Davis. I began working with Davis the previous fall, when I resided in Manhattan Island, going out there for work, and later during the active working season of constructing and operating this incubator, I resided in Mr. Davis' residence.

My impression is that the incubator was still in operation by Mr. Davis and his employee Mr. Miller at the time I left [fol. 777] his residence. Mr. Davis allowed me a small compensation to help me live while I was working, but I was also a writer and had other employment at the time. I wasn't exclusively employed by Mr. Davis.

Q. Didn't you leave Mr. Davis' employ, and didn't you leave this hatchery before the hatching season was over?

A. My memory on that is that his man Miller whom I instructed in the operation of this incubator and who was in charge of his chickens, continued to operate that incubator after I left, yes, therefore, in that sense I left before his hatching season was over.

Q. You didn't see the thing through this one hatching season then?

A. In the sense that I stayed at the residence there in the constant employ of Mr. Davis through the entire hatching season, no.

Q. That is, you didn't see it through the whole hatching season, that is, you didn't stay with it during the whole hatching season of 1911?

A. No.

Q. And you don't know personally whether it was continued to be used during that season, do you?

A. Yes, I know Miller operated that incubator after I left, because I remember discussing that matter with Davis.

Q. That is all a matter of hearsay only, you remember what somebody told you.

A. I don't remember any more details than I have given you on that.

In this Davis hatchery there were forty trays, ten layers high, four trays to a layer. We rated the egg capacity of each tray as 150. I think that was probably overcrowding a little, because my memory of those trays is that they were [fol. 778] approximately 2 by 2 feet, which was just about half the size of the Muskogee trays which were rated at 250. Therefore, the capacity of those trays would have been 125 minimum, 150 maximum. I did not intend to give the impression by my testimony yesterday that this Davis hatchery was run any time completely filled with eggs. I testified in the Cooley case that the maximum number of the eggs in the hatchery at that time was about 2,000, and that is correct. The hatchery was built for 6,000 eggs, but there was no need to operate it at that because we were not engaged in the hatching business, but only running a private poultry farm. At no time while I was there was the hatchery run to capacity. It was never run more than one-third capacity. I do not know how it would have operated had we filled it full. When we operated that hatchery we set the eggs about twice a week. I do not recall, in the Cooley case, I testified we set once a week. I do not remember whether we only set once a week.

When we set at any one time, we would plan to fill four trays in a single layer at once to equalize the resistance for the air flow in the four vertical tiers of trays, by having the same depth of eggs in each part of that compartment. It did not have means to shut off any part of the vertical tiers as did the Muskogee machine, hence it would be essential to good practice to fill the layer clear across to equalize the air resistance.

Q. Did you not testify in the Cooley case, on page 109, in answer to cross question 91: "My memory is that we had about at least three horizontal layers in there, hatching [fol. 779] at one time, we got eggs in about three stages, putting them in once a week, is my memory." Did you not so testify in the Cooley case?

A. I did.

Q. Then, your testimony on the stand in the Cooley case is at variance with your testimony given this morning, and you really only set, in the Davis hatchery, once a week?

A. I cannot be positive on either statement for this reason: The hatchery of this type permits you to set eggs when you please, at any time. When you put them in is a matter of when you get the eggs, and the matter of convenience of the size of lots run. Mr. Davis had eggs supplied by his own fowls. He also purchased eggs. The statement that I set once a week, which appears in the Cooley testimony, is probably my memory then, perhaps refreshed by discussions with Mr. Davis of the frequency at which he purchased eggs. He might have set his own eggs more frequently. I do not remember the details of the time we set these eggs, because it was of no importance to the principle of incubation but merely a matter of convenience in handling the eggs and taking off chicks. I have no memory today, after some twenty-two years, on which to base a positive statement as to the exact time of setting these eggs. Therefore, I am not willing to say that I testified falsely then or that I testify falsely now. I am giving the best memory I have today. I do not say that my testimony in the Cooley case was wrong.

Q. Do you remember on page 111 of the Cooley record: "I can remember we placed eggs in once a week. I cannot remember the exact number of hatchings."?

A. I don't remember. You have it there written, I am willing to accept it that I testified.

[fol. 780] In this Davis hatchery, when we made one setting of eggs, we set one layer of eggs in a horizontal layer of four trays. We might not always have done so. I remember using paper in the empty trays to block off air passage through them in case the eggs were too few in number to spread over the machine. I do not think we operated the Davis incubator with less than one full layer of trays across the machine. We were interested in the equalizing of the temperature of the various layers of eggs and not having full capacity to test that principle, we would have blocked off a portion of that area, using less of the cross-sectional area and a greater number of trays in depth, which would have been the purpose of that method which I just referred to.

We purchased eggs from the place from which Mr. Davis was buying eggs in case lots, 360 eggs, which would have approximately filled the four trays. That is the reason I testified that we were in the habit of putting in the four trays at once. That was our egg supply, but we had additional eggs from his fowls which might have been put in more frequently than smaller lots. I think that is where the confusion of memory occurs in this matter. I don't remember any further details than I have given you.

If we set one complete layer of trays across the machine one week, then the next week we set another layer of trays across, and the next week we set another, we would never have had more than three horizontal layers full, if that is all the eggs we set. That is not all we ever set. We never set more than 2000 eggs, but that is less than 2000 eggs. [fol. 781] If we set as testified in the Cooley case a layer of trays across the machine once a week, we would never have had, at any time, in that machine, 2000 eggs. The testimony regarding the practice of setting eggs once a week refers to the eggs we purchased in a case, which were shipped once a week, but it does not refer to the full use of the machine, because as I have said, we also incubated eggs from Mr. Davis' own flock in addition to those purchased.

Q. What you testified in the Cooley record—you only set the eggs once a week and you want to change the testimony you gave in the Cooley case?

A. To that extent, yes.

Q. Then you weren't testifying correctly when you testified in the Cooley case five years ago?

A. The testimony in the Cooley case five years ago is inconsistent with itself, when those two statements are contrasted, because I testified in the Cooley case that the maximum amount of eggs was about 2000 eggs a week.

Q. That is to say, you are changing your testimony that you gave in the Cooley case for the benefit of this defendant?

A. I am calling your attention to the fact that the difference which you are now trying to establish appeared in my testimony in the Cooley case.

Q. Now, Mr. Hastings, how many times did you have the maximum number of eggs which you had in the incubator, which you say you had—how many times did you have that?

A. Unless a man counts his eggs and puts in exactly the same number, he only has a maximum once.

The depth of each tray in the Davis incubator was about 4 inches. The space between the top of one tray and the bottom of the next higher tray was sufficient to allow for [fol. 782] the slide in the chamber, on which the tray slid, a sufficient clearance. It would have been an inch or thereabouts. You use a ¾ inch slide ordinarily, and you would have to allow for clearance. I should think an inch would be very close to that distance.

While we were running this hatchery at the Davis plant, we were also running the Cyphers incubators, for comparative test purposes with my machine only, otherwise not. Mr. Davis owned four Cyphers incubators. He did not run them during the period that we ran mine. He did not run all those incubators full capacity during the season. He ran them for purposes of comparison with my machine. He did not run them full capacity for the purpose of using the sources of incubation, except for comparative purposes. I do not remember the exact number of hatches he might have used from this machine. I do not remember the exact number of eggs incubated in the Cyphers machines nor the length of time they were run.

I don't remember the date when I started to run this incubator shown in Defendants' Exhibit 21. I wouldn't be positive whether it was in March or April. It was earlier than April, I would be positive there. It was in March or February. It might have gone back to February, possibly, I don't remember. This incubator which is shown in Defendants' Exhibit 21 is the only incubator which I built at the Davis place.

As to whether I ever at any time enclosed the egg chamber in pieces of burlap or fabric above and below, my memory is that of trying panels of fabric for the purpose of [fol. 783] equalising the distribution of the air throughout the cross-sectional area. Whether I used those panels of fabric above and below the egg chamber, I think I provided for those and tried them out and found they were not necessary and discontinued them. That is my memory of it. It is not very accurate. When I used those panels of fabric above and below the egg chamber, the fan was outside of the panels. The fan was supposed to drive the air through those fabric panels. I did that early in the season; at the

beginning of the operations. Those fabric panels had the effect of checking the air flow and served no useful purpose. They were deleterious to incubation only to the extent of checking the amount of air flow; making the fan less efficient. I do not remember whether I tried to hatch eggs with the fabric enclosure above and below the chamber. I would know as to the effectiveness of the air circulation by other means than waiting for a hatch. The problem was that of maintaining the best vertical equalization of temperature and the effect of the fabrics was judged by the effect of temperature distribution and that was sufficient to judge as to whether they were advisable or not. I do not remember whether we used the fabric panels through a complete hatch or not. My memory of the use of the fabrics there was that it was of a nature of seeing the effect upon the equalization of temperature throughout the incubating chamber. That was the essential point of the trial of such fabrics and was the essential point as to whether they would be used or not. I determined this by actual use of the fabric. The expediency, in my mind, of the idea of using fabrics was a combination of the idea of diffused air, [fol. 784] which was made a great point of in the Cyphers machines of that day, plus the idea of the distribution of the air equally throughout the area of the egg chamber. It was a trial device to be tried out in connection with the distribution and flow of air, and it was found to be of no practical consequence, whether they were used or not, except as it increased the resistance in the air stream, and hence tended to check the flow of volume of air or the forced draft. I found this out by an actual trial.

Q. Did you find it out in actual trial to attempt to hatch eggs?

A. As judged by hatching effects I would say not. As judged by operating the incubator——

Q. I am not talking about operating the incubator empty, I am talking about hatching eggs. Did you try it out while the incubator was actually in operation hatching eggs?

A. Probably, yes. My memory does not supply me with positive memory on that question.

Q. Then you did try it out with the panels and found it wouldn't work?

A. I found that it checked the flow of air.

Q. Pardon me, will you answer my question?

A. No, sir, I will not, because you say it wouldn't work. What do you mean by "wouldn't work"?

Q. Hatch eggs.

A. No, sir, I never spoiled a batch of eggs in that incubator.

I did at one time have the incubator operating with eggs in it and the fabric panels top and bottom.

Q. Then you did have an incubator other than that shown in Defendants' Exhibit 21, at the Davis plant?

A. I don't consider that the insertion of the fabric panels [fol. 785] makes it a different incubator, and as we operated the incubator without the panels, the drawings are correct in that respect. The drawing does not show the fabric panels which I used at the Davis hatchery because that was a trial effort or idea in the first construction of the machine and was dropped from the usage, and the drawings show the machine as used after it had been tried out and found that the fabric panels were not necessary. That was not another incubator. If I carried a bucket of water and set it in the moisture chamber it doesn't make it another incubator. The presence of the fabric panels would affect quite materially the flow of air.

Q. Therefore, you had another incubator at the Davis plant in which the flow of air was different than shown in Defendants' Exhibit 21?

A. The change of rate of flow of air does not make another incubator.

Q. Will you answer my question?

A. I did not have another incubator.

Q. You operated an incubator, however, at the Davis plant, which is not the incubator shown in Defendants' Exhibit 21?

A. I did not, I refuse to accept that definition that that makes it another incubator.

Q. And that incubator with the fabric panels was the thing that you worked on first at the Davis plant, wasn't it?

A. The incubator shown was used or tried or operated with fabric panels at the beginning of the season. At the beginning of that operation I was experimenting. Any man who builds an original device of any sort and puts it into use is experimenting. If he finds that that device gives [fol. 786] service and uses it at that time he is not experimenting but using it. The whole operations were not ex-

periments. In some of my later articles, in referring to the operation I might have used that term "experiment" because I consider a man working out his experiment. I consider you cannot build and operate a new device without experimenting. The first trial is an experiment. If you make alterations in the article, some mere detail, those might be defined as experiments. We got an incubator which we operated for a length of time which was the same. It takes three weeks to hatch eggs, and after trying fabric panels or any other device and making alterations, and we then hatched a batch of eggs and find they hatch and repeat the experiment, that repetition without change is not experimenting. I do not know whether we ran a batch of eggs with the fabric panels. I don't remember whether we completed the hatch with fabric panels. You are trying to bind me down to the definition of experiment as used by a scientist as against the legal meaning. Asked whether the use at the Davis plant was kept secret, the witness said: This use at the Davis hatchery was in the residence of Mr. Davis, in the cellar. He was hatching for himself alone, or I was hatching for him, his employee, and it was not public in the sense that we had public customers nor any bid made to the outside public to come and visit the hatchery, but Mr. Davis's friends and mine were shown the hatchery.

Q. And you kept it secret because of the fact that you hadn't filed a patent application at that time, isn't that correct?

A. I think that was my impression at that time, of not wanting the general public in, yes.

[fol. 787] When I filed my patent application in May, 1911, I showed the incubator with the egg chamber enclosed by fabric panels above and below. My memory concerning just when these fabric panels were in or out of that machine, is not sufficient to answer details as to time or as to completeness of one or more hatches. The principle involved of distributing the air over a horizontal area by some means to spread it, was in my mind, and hence was put in the patent application, and was used, in a modified form but for the same purpose, in the Muskogee machine, with a series of compartments with the sliding doors above to regulate the flow of air into these different compartments,

and it was thought of speading the air over the area, that I was illustrating in the patent drawing. The patent drawing, which is reproduced at page 295 of the Cooley record, shows dotted lines which might be interpreted as fabric or as holes like the Madison Cooper platforms.

Q. Were those not described in the specification of the patent as "EE fabrics or perforated partitions for the purpose of causing an even horizontal distribution of air throughout the hatching chamber"?

A. Thanks for substantiating, from the patent specification, the statement I have just made from memory.

That is a correct description of the panels in the patent application. There are no such panels apparent in the drawing of the Davis hatchery which I have introduced as Defendants' Exhibit 21. I filed this patent application May 3, 1911.

I did not operate the Davis hatchery with perforated panels above and below, as distinct from the fabrics referred to. That would refer to a solid area with definite [fol. 788] holes like auger holes through wood. I used no such device in the Davis plant. This application for patent was prepared while the incubator was in operation.

This pamphlet entitled "A Million Egg Incubator" was prepared for promotion purposes; trying to interest people in the particular region in Kansas and Oklahoma, with the building of hatcheries or establishing poultry operations based on artificial hatching. I prepared this pamphlet with the idea of getting someone to invest in an incubator built in accordance with my ideas and to spend money on it. I did not circulate this throughout Kansas and Oklahoma. That is too wide a statement. I have no memory of the exact places I might have handed out or mailed this pamphlet. I prepared it with a view of using it, as just stated, and I remember making an effort to interest people in such a hatchery at Topeka, Kansas, Independence, Kansas, and Muskogee, Oklahoma, the last point at which I was successful. I used this pamphlet for the purpose of furthering that scheme with the idea of getting myself funds to build an incubator. In that pamphlet I said: "In the season 1910-1911 I built and operated a 15,000 egg single compartment hatchery in the poultry plant of W. B. Davis in a suburb of Brooklyn". I will take the responsibility for that

mis-statement. That was a mis-statement made for the purpose of promotion. I exaggerated the capacity more than two and a half times for the purpose of getting people to put money in it. As a matter of fact I hadn't run my incubator with more than 2000 eggs in it at the time I made [fol. 789] this statement. I went to Kansas in the late summer of 1911.

As to whether a corporation was formed when I connected with Mr. Lieber at Muskogee, to operate this plant, I have no specific memory on that point. Mr. Lieber was a lawyer and he might have planned or might have formed a corporation. I do not remember. I won't deny a corporation was formed, or that I perhaps owned 49 per cent of the stock of a corporation. Mr. Lieber, being a lawer as I said, would have probably protected his interest by forming a corporation. I don't remember whether I owned 49 per cent of the stock of a corporation. I will not deny I did. My memory is vague on whether I was an officer of a corporation. Mr. Lieber, being a lawyer, probably made some such arrangement. There was no formal functioning of a corporation, as I recall. He may have drawn up the papers and made that arrangement. He paid me a small salary and employed me to work while building this hatchery, and that was my memory of my practical arrangement with him, and the arrangements made for further developments I would have left with him, and what those were I haven't had occasion to recall, and my memory is hazy on that point.

My memory coming back today, I would say that I probably did own 49 per cent of the stock of a corporation which was formed by Mr. Lieber. I am not at all positive. Undoubtedly, if it is on record I did, but I hadn't thought of it for years, and I don't know. If you have a record to the effect that I owned a 49 per cent interest in the outcome [fol. 790] of the project, then I did. I don't deny it. I do not remember that I did.

I built one hatchery there at Muskogee. This hatchery shown in these Defendants' Exhibits 22 and 22-A is the only one I built, and changes which were made in operation were that of the change in fans, to which I have testified, and there were changes made in the thermostat control of the gas flow. In the incubating chambers and tray usage, direction of air flow and ventilating principles of the air flow, and the method of incubating with a forced draft, and

the structure of the egg trays, there were no changes made. There was a change made in the fan, due, as I testified yesterday, to the fact that we first installed a fan, because Mr. Lieber owned it and we installed it. Finding it did not give a sufficient volume and force of air, we secured the blower of more power. The diameter of the screw fan was either 16 or 18 inches. That is the fan which is shown in those photographs introduced yesterday.

Asked when he started the incubator in operation, the witness said:

A demonstration hatch to show that the incubator would control temperature and hatch eggs, was conducted, and the hatch brought off, as I remember, about the middle of January. That is the hatch, a picture of which appears in the Poultry Culture article. A small lot of eggs were set in that hatch. I don't know how many. You see the picture, you can judge for yourself. The chicks that are shown in this article in Poultry Culture are probably all that came off that demonstration hatch. I don't know. There is my picture. My memory wouldn't serve me any better after [fol. 791] 21 years. As to whether that was the 250 eggs as described in the column on the third page of the Poultry Culture article, I have no memory of that. I would have to refresh my recollection on that statement from the article. (Referring to article.) The details of that hatch are here given. It says, "250 eggs were placed in the machine and 164 chicks hatched". That is the demonstration hatch that I have been talking about, brought off early in January. That is the demonstration hatch which is illustrated in this photograph appearing in Poultry Culture. That is the same hatch which was illustrated in the photograph appearing on page 88 of this scrapbook, at the left except that it is a separate photograph. One is taken with myself, and the other with my assistant employee. They were taken on the same day. The photographs show them to be of the same hatch, with a different man shown in the picture.

Q. How were the eggs set in this hatch—set all at one time?

A. They were hatching all at one time.

Q. And were they set all at one time?

A. I think my answer is sufficient—they were hatching at one time.

It is very hard to get them to hatch at one time if set at different times. That was 250 eggs, as stated in Poultry Culture. I have no memory except refreshed by the Poultry Culture article. That was the capacity of one tray. The capacity of the machine, when in full operation, was approximately 30,000. Each compartment had room for 5,000 eggs, if all trays were filled with eggs in incubation, none of which being hatched. This was a demonstration, with a demon- [fol. 792] stration tray. It is not a demonstration of the hatch of the machine, but merely to hatch eggs. It was made in the winter before hatching season began, for purposes of demonstration, as shown.

I do not remember whether at the time that these two photographs were taken, the one in Poultry Culture and the one on page 88, there were any eggs in any other part of the machine. Probably there were not, as that hatch would have been started about Christmas, and it was not a hatching season. I presume that there were no other eggs in the machine but these 250. I do not remember positively. The eggs that were hatching at one time were all set at one time. I don't remember whether other eggs were placed in before one hatch was brought off and started or not. The other trays shown in these photographs were all empty. They are there to show the position of the trays. The article states that this is a picture of a demonstration hatch in the advance of season. It does not give any inference that the other trays were full.

I have no memory of the date when we started commercial operations in this Muskogee hatchery. As near as I can place it, I would say in the month of February. It was after these photographs were taken. I started operations with this Davidson fan which was gotten from the moving picture theatre. As to how long did I operate with that fan, I can't give you the specific time, but it was into the active hatching season, in the early part of it. The change of fans was made while the machine was in operation; that I remember. [fol. 793] This change of fan was brought about by the inadequacy of the first fan. I so testified. My memory is that the other fan was ordered from the American Blower Company, which I believe is located in Detroit. I don't know the date that the fan came in. I have not shown in the drawings the fan that came from the moving picture theatre. I have shown the blower which was used in the main bulk

of the hatching season, and which was the fan used when the machine was operated to its fullest capacity.

We ruined no eggs with the first fan in the sense that any complete hatch was a failure or all eggs in that incubator at any time failed to hatch. It was evident, from operations, that the fan installed was of insufficient capacity to adequately handle the added resistance of full egg capacity and to continue to equalize the heat, which was the reason for ordering the larger power fan. We wouldn't have ordered the larger fan if the first fan was adequate. We were still experimenting at Muskogee on the fan size. The fan is an essential part of the incubator. We were still experimenting at Muskogee on the size of the fan to give service.

Q. Didn't you ever experiment while you were at Muskogee with flumes to the different egg chambers from this fan?

A. There were no changes made in the flumes at Muskogee except such necessary change at the immediate point in which the fan blew the air direct from the fan, because of the different size of fan. There was a structural change made in mounting the second fan, but no change was made in the flumes beyond that point. I do not recall the state- [fol. 794] ment in Poultry Culture appearing on the second page of the article: "To accommodate this need, the inventor has ingeniously arranged that the air be divided after it leaves the fan, into two flumes. One of these passes into the heater and the other does not." I have no memory of experimenting with that sort of construction at Muskogee. My impression now is that the statement originated from Mr. Hicks, with whom I had discussed my plans and ideas of incubation at length, the summer before, and the statement, as made, would seem to refer to the idea of regulating the heat by diverting the air flow past the heater, but no such construction was actually used at Muskogee. I have no memory of furnishing that statement in detail. I do not deny I furnished that statement which appears in Poultry Culture, but I have no memory of it. I would presume that the statement probably originated from Mr. Hicks in my conversations with him. No construction as described or suggested in Poultry Culture was actually built.

I did not operate this incubator at Muskogee with eggs of one age in a single compartment, not a full compartment of eggs of an age. As to whether I ever operated it with eggs of one age only in a single compartment, I did, because a single tray in the test hatch would have been that. Whether, disregarding the demonstration hatch that I testified about, we ever operated the incubator at Muskogee with compartments in which the eggs of one age were placed in one compartment only, we never operated with eggs of the same age put in one compartment so as to materially fill the compartment. The practice was to keep eggs of dif- [fol. 795] ferent ages distributed throughout the different compartments, which aids in the equalization of the incubating chamber. I have no memory of testing this incubator at Muskogee with a compartment filled with eggs of one age. I do not deny that I did.

The slides provided in the top of the chambers were installed for the purpose of regulating the flow to the different compartments, but finding that the air flow was sufficiently distributed among the several compartments, the practice was, when operating to anywhere approximating full capacity, to keep all slides full open. The purpose of the slides was that of distributing the air flow. We experimented with them to find out if they were necessary for that purpose. We used them in blocking off chambers, as in running less than the full seven chambers. We did not find it was necessary to use them in full operation; hence they were run open. We used the slides, however, and adjusted the slides to various positions while the compartments had eggs in them, and while the compartments to which the slides were connected had eggs in them, and for the purpose for which they were intended—that if you were operating one compartment with a large number of eggs and were starting another compartment nearby with fewer eggs, then, the slide would be used to give more air to the compartment having more eggs, but after sufficient eggs were available to use all compartments to essentially equal amount, then it was found best to run the slides full open.

In these Muskogee hatchery drawings, Defendants' Exhibits 22 and 22-A, there are some differences between these drawings and the drawings which were in the Cooley [fol. 796] case. The chamber (G) in the drawings intro-

duced yesterday is divided by a vertical partition apparently extending the entire height of the chamber, and that is not shown in the drawings introduced in the Cooley case. The error on the part of the draftsman, in the Cooley case, is analogous to that shown in the Davis machine, as he did not conceive that the outlet of the fan was closed against the return air. That error has been corrected in the present drawings. As to calling attention to that error in the drawings when I was on the stand in the Cooley case, my memory of that is exactly as in the Davis—it is a similar error, whether it was brought up in questioning in the Cooley case or not, I do not know; I don't remember.

Q. That is, you find something in the drawings introduced in the Cooley case that you needed to put into this case, is that right?

A. For greater accuracy of detail, yes, sir.

Q. And the drawings which were prepared in Toulmin and Toulmin's office show this essential thing, whereas the drawings which were put in in the Cooley case do not show that?

A. They do not show that. I told the attorney handling that case that those drawings were inaccurate. He informed ~~me~~ that they were diagrammatic drawings to enable me to describe the principle of air circulation. The air circulation is correctly shown in both drawings, insofar as its direction of movement is concerned. The draftsman's error in not enclosing the outlet of the fan is obviously a point which would make the apparatus, if actually so constructed, inefficient, as it would merely waste air flow. It would be a back flow of the air in the fan chamber. In [fol. 797] that respect I did not improve my recollection of this thing in 1933 over my recollection in 1928. In that respect I knew that that error was there and called the attention of the attorney to it, who, as I have already stated, said that the drawings were sufficient for me to testify from, they were diagrammatic drawings only, and accurate enough for the purpose. I don't remember whether I called attention to that error when I was on the stand in the Cooley case. You will have to read the record. I have no recollection. As to testifying in the Cooley case that I made these drawings, my answer will be similar to that made in the Davis machine, that I stated the information

to a draftsman who made the drawings and who did not correct the drawings after they were shown to me.

These drawings in the Hastings Muskogee hatchery, introduced yesterday, were made in Toulmin & Toulmin's office within the last two or three weeks. Besides my recollection to base these drawings on, I had photographs and descriptions—no drawings. Those photographs are some of the photographs which were introduced in evidence yesterday. I am not holding back any photographs. I had not recently seen the photographs—all the photographs introduced—I knew of the photographs at the time. They were taken, in fact, with my own camera. These drawings were made from my recollection and from these photographs that have been introduced in evidence. There are no photographs that I am holding back. I haven't introduced any photographs which show this blower fan. The only photograph which I have introduced shows this fan which was inadequate. This particular fan that is shown [fol. 798] in these drawings, the location, is all from my recollection. It is not from any photographs or any contemporaneous records. These photographs were not all taken at the same time. The two photographs on page 82 were taken very early in the season. I do not know whether they were taken at the same time that the photographs of the demonstration hatch were taken. The photograph on page 84, showing the fan, was taken early in the season before the fan change was made. I don't know the date when that photograph was taken. I have no memory of that date, except that the fan was there, and that was in the early operation, as described. The photograph on the same page showing me putting an egg tray into the machine was probably also taken at an early date, but I am not positive of that date. It could have been taken at any time, from the contents of the picture. It was probably taken about the same time as the demonstration hatch. I can't say. That is not the demonstration hatch. It is the eggs. That photograph was probably taken at the same time as the demonstration hatch. I couldn't be positive. Page 86 shows a photograph of a large number of eggs in the machine, and was obviously taken later in the hatching season when the machine was in operation to or near full capacity.

As to the other photograph on that page, of the single

chamber, I cannot give the date, as it might have been taken at any time. I have already referred to the photograph on page 88 to the left, where I am shown. The demonstration hatch was back in January. The other photograph on the same page may have been the same hatch, I have no memory, but it very likely was. The photographs [fol. 799] on page 90, the full tray of white leghorn chicks, was taken later than these demonstration photographs, and probably well into the middle of the hatching season. They are chicks, as I remember, from Mr. Gaunt, which were the best hatching eggs we had furnished to the plant.

Comparing Exhibit 22-A with the photograph at the left on page 84, the photograph is taken with the camera in the chamber (B) focused through the door (M), showing the fan in position in the chamber (G) and showing the different arrangement of the wooden partition at the outlet of the fan, which change was made necessary to accommodate the two styles of fans. I will mark the approximate location of the camera with a cross on Defendants' Exhibit 22-A. I will indicate the direction in which it is pointed by an arrow. There was never any change made in the arrangement of the incubating chamber.

Q. Is this a corner appearing here on the photograph at the right, immediately adjacent to the fan—isn't that a corner?

A. May I answer that question by drawing on the floor plan the location of the partition on which the fan is mounted?

Q. I am asking you a question first—isn't that a corner?

A. It is not a right-angled corner.

This compartment in which the fan is located is about 3 feet high. The fan is delivering to the right of the photograph. It is delivering air at an angle slightly off from parallel to the row of trays into the passageway behind the row of trays lettered "N" in our drawing. This partition shown in figure 2 is not the partition at the back view. The [fol. 800] back view here shows the extreme rear of the incubator before the rounded corner shown in the drawings was put in place. This line marked X, which is seen running from the corner outwardly, is the thermostat.

The room shown on page 82 of the scrapbook (Defendants' Exhibit 26 for Identification) is the room indicated in the drawing by "B". That is the room that you enter

immediately as you come into the door (A). The camera was set outside of the incubator, photographing through the door (A). The panel that is shown in the lower part of the picture, directly behind, is the door (M). Above that is merely storage space. That is the door through which you got access to the fan.

The diagonal line across from the upper righthand corned of the door which shows beneath it is a partition set obliquely, provides space for the air flow under the full width of the incubating chambers into the fan chamber. That is the intake of the fan coming through there. The exit is at the rear. That is not the partition shown in the photograph on page 84. That construction is not shown in the drawings, Defendants' Exhibit 22-A. That is a detail of construction having no bearing on the operative principle of the air flow.

Q. But as I understand, this is the only contemporaneous record you have of the construction of the incubator, and yet you do not show that construction in your drawing, Defendants' Exhibit 22-A, that is correct, is it not?

A. The drawing is diagrammatic and that detail was not changed. That detail may have been changed in the installation, and the other fan was larger and was mounted differently in that chamber.

[fol. 801] Q. We are trying to arrive at a correct showing of the Muskogee incubator. The only contemporaneous records which you have are these photographs (Defendants' Exhibit 26 for Identification), and you haven't shown the machine shown in the photographs, on your drawings, Defendants' Exhibit 22-A, that is correct, is it not?

A. The details are not all on the drawings.

Q. You haven't shown the machine shown in the photographs?

A. I have shown diagrammatic drawings that illustrate the principle of air flow and mechanical incubation, not all mechanical or structural details are shown on the drawings.

Q. Then you got these drawings, Defendants' Exhibits 22 and 22-A up, for purposes of this case and not for the purpose of showing the incubator as it was actually constructed?

A. I got the drawings up to show the essential principles of operation of the incubator, which are being contested in this case.

Q. I am not asking you about the essential principles of operation which are being contested in this case. I am asking you about the incubator as actually built, and the drawings, Defendants' Exhibits 22 and 22-A, do not show the incubator as it was actually constructed, that is right?

A. It is not. It does not show full mechanical details, it shows the essential structural principles.

Q. You have selected what you call structural principles, and have neglected the actual construction of the incubator —that is right?

A. Neglected unimportant details.

Q. You have neglected details such as location of the fan [fol. 802] and other things of that kind in making these drawings, Defendants' Exhibits 22 and 22-A?

A. No, not the location of the fan. There is no alteration of the drawings to show any early position of the location of the fan. It is stated in the testimony that the fan shown in the photograph is not the fan illustrated in the drawing. One is an exhaust fan and the other is a blower.

Defendants' Exhibits 22 and 22-A do not show this ceiling about 3 feet high from the floor of the incubator, which appears in the photograph. The thermostat shown on those photographs, which were taken early in the season, prior to the commercial operation of the machine, is an electric thermostat. It was replaced by ether wafer thermostats, which were placed in the machine at approximate locations shown in the drawings. At the time those photographs were taken, I was merely working with this thermostat in that location. The machine was not in any commercial operation. The only contemporaneous evidence which shows the location of the thermostat in the position shown in the drawings, Defendants' Exhibits 22 and 22-A, is a gas feed pipe leading to the thermostat shown in the photograph on the right of the page 86 of the scrap book (Defendants' Exhibit 26 for Identification). That doesn't show the interior of the machine so you can't tell from these photographs where the thermostats are located. You will have to take my word for that.

In the photograph on page 82, the instruments shown in the righthand photograph are the electric thermostat referred to and a mercury float gas valve for the regulation of pressure, and with which I was testing the application [fol. 803] of the thermostat previous to the hatching sea-

son. The instruments shown at the left of the photograph on the left of page 82 are also the same—the gas pressure valve with a thermostatic control just referred to. It was not used during the actual commercial operation of the machine, and therefore not shown in the drawings, Defendants' Exhibits 22 and 22-A. I am testing eggs in these photographs. The photographs were taken early in the season and were taken for purposes of publication similar to the Poultry Culture article.

The photograph shown on the righthand side of page 90, shows more chicks in a tray than could be hatched from eggs in the tray, and is a pretty picture. The trays are not shown in the incubator. That was simply a way of photographing a niee bunch of chicks, taken in the sun-light outside. If you find that I made a statement that those represent the chicks actually hatched in those trays, then I concede that your term "stuffed" might apply. I didn't say the answer was yes. I qualified that yes.

Q. The answer is yes—those trays have been stuffed for the purpose of taking a picture?

A. That is your language.

Q. Isn't that correct?

A. I didn't use the language except at your suggestion.

Q. I wish you now would take these drawings, Defendants' Exhibits 22 and 22-A, and draw in the construction shown in the photograph (page 84)?

Mr. Greer: Let the record show that the witness thereupon sketched in, in red pencil on Defendants' Exhibit 22-A, the location of the construction as requested.

[fol. 804] Q. Now, put in the water pan.

A. That would have to be dotted in.

I see where you have got me—the angle of the fan is first drawn and it is not quite correct. That water pan appears to be about 4 inches deep. It would appear to be about 18 inches wide and somewhat longer. It appears to be a rectangular pan in the photograph. It was rectangular, quite obvious.

Q. Then your fan wasn't set at an angle the way you drew it now?

A. The fan was not set at as much of an angle as I drew it. The effect in the photograph of fore-shortening gives an illusion of the partition on which the fan is mounted, being not parallel to the opposite wall, but upon my attention

being called to the rectangular pan, I see that this is an illusion. I don't know whether that wall is perfectly rectangular—perfectly at right angles to the back wall. I remember this fact quite positively, that the width of the fan outlet being greater than the width of the passageway at the rear of the egg chambers required that the flow of air be narrowed and brought into wedge shape. My presumption, as made in the drawing a minute ago, of the angle being somewhat oblique, is the facing of the fan towards the center of this flow, and because of the wedge-shaped construction of that immediate passageway into which the air flowed directly from the fan. As a matter of fact the fan was set in the position to force the air from it into the passageway, in the drawings marked "N". The exact angle in construction I do not have from memory, and from the illusion of the photograph, have been in slight error as to [fol. 805] the obliqueness of the angle. This I do know, that the purpose of the compartment or box shown in the photograph is to receive the flow of air from the fan and narrow it down and lead it into the passageway (N).

Q. As a matter of fact, even looking at this photograph, you can't remember very much about the construction of the incubator, can you?

A. After 21 years I cannot give it in inches. I can give it in principle of the purpose and direction of the air flow.

Q. I am not asking you that. I am asking about the construction of the incubator, not the construction of a principle you had in mind, or something you thought about later. I am asking about the actual construction of the incubator as it was, not one you had in mind. Will you state whether or not this fan was set at an angle or not?

A. Angle to what?

Q. Whether it was set at an angle to the back wall or whether it was right angle to it—set obliquely to the back wall?

A. As the evidence of the rectangular water pan shows, the fan was not set obliquely to the back wall, but I still insist that the partition shown at the right, showing the chamber into which this fan blows, is oblique to the back wall. None of that is shown on the drawings, Defendants' Exhibits 22 and 22-A, because the drawing shows a larger fan, which was a blower, and the size for which and the space for its motor required a different mounting or plac-

ing in the chamber, as shown in the drawings. We don't show the horizontal partition 3 feet up from the floor in our drawings. That partition was merely a bench to use for storage space for boxes. The ceiling above the fan is the bottom of the bench shown in the photograph on the left-hand page 84.

[fol. 806] I cannot state the time I operated the incubator with the fan as shown in the photographs. It was at the beginning of our operations, that fan was used in the early part of the commercial hatching—in the beginning of the commercial hatching. The article appearing in the Poultry Culture Magazine says: "Mr. Hastings proposes to incubate 60,000 eggs under this roof at one time". That statement was of a proposal of construction, half of which was constructed, the space in the building providing for the other half of the construction after business had later warranted it. We never did build this and never claimed it. Our business never did warrant expansion.

At the last of this article in Poultry Culture it states: "If the Muskogee plant continues to do good work during the present season, Poultry Culture will advocate a Hastings hatchery as a feature of the Kansas Agricultural College new poultry department for 1913." No such installation was ever put in the Kansas Agricultural College.

(Recess taken to 1.30 P. M.)

Comparing Exhibit D-J in the Cooley case and the drawings prepared in Toulmin and Toulmin's office: The blower (I) in the Defendants' Exhibit D-J for the Cooley case appears to be drawn somewhat smaller than that in Fig. 3 of the drawings in the present case. None of these drawings are exactly to scale, and my testimony as to the size of the blower and its make is exact—an 8 inch outlet Sirocco blower, standard at that time. The drawings that I put in this case appear to show the fan larger than the drawings [fol. 807] shown in the Cooley case. Neither drawing is to scale. The drawing of the blower is larger in the present drawings—later drawings. I do not know the exact number of eggs we had in this Muskogee incubator at one time. I know that the machine was filled to such capacity that there were no more available trays, and that we, at times, were obliged to delay the putting of eggs in the incubator for a day or two to get space. I distinctly remember that

it was filled to capacity, and eggs were delayed in entrance at one or more times. One time is all I can possibly testify.

When I came to Muskogee in 1911, and endeavored to interest the Commercial Club in backing my hatchery, I believe I was referred to Mr. Lieber. I cannot testify as to the exact amount Mr. Lieber agreed to furnish, but I presume that to be correct, $1,000 to start the business. I believe it is correct that Mr. Lieber and I organized a corporation under the laws of Oklahoma, under the name of the Hastings Hatchery. Just a minute, I think I could supply the names of the incorporators of that company, I am not sure. Such company would have probably had—this is not positive testimony—Mr. Lieber and myself, probably Mrs. Lieber, and a man who was Mr. Lieber's law partner, by the name of Ed Hastain.

I have no positive memory that the corporate shares of the company were divided, 50 per cent to Mr. Lieber, 49 per cent to me and 1 per cent to Mr. Hastain, but my impression is that that is correct. I didn't put any money in it. I had no patent. I may have agreed to assign a patent if I secured one, to such corporation, I probably did, I have [fol. 808] no memory of that transaction today. Very probably I agreed to assign the patent, if it issued on my then pending application, to the corporation. I have no memory today except as you refresh it by that statement. Whether that was the consideration for the 49 per cent of the stock that I got that impresses me as reasonable and probable. I am taking your word for that; you may have a record of it. I have no direct memory of that detail. I do not deny it.

The first demonstration hatch undoubtedly was from our own eggs. We operated with our own eggs for a while and continuously with eggs that we purchased, the chicks of which we sold throughout the season, but the bulk of the operation was custom-hatching.

Our custom-matching came quite early in the season, but the first test hatches were from eggs we owned. The custom-hatching came afterwards but at the beginning of what would be considered the hatching season. It was not a change in plan. The plan was from the start to do custom-hatching.

I do not remember that a Mr. Richard Shanafelt brought 200 eggs, and he only received three chicks. I do not remember that after that one experience that Mr. Shanafelt

had with our plant, he never brought any more eggs in. He probably would not. I don't remember Mr. Shanafelt. I do not remember a Mr. L. A. Corey. I do not recall that Mr. Corey three or four times brought in 100 eggs at a time and never received a single chick. I have no memory of it. I do not remember that a Mr. S. J. Anderson brought in 200 eggs to be hatched and only got five chicks out of it. [fol. 809] I do not remember it. I don't deny it. I do not remember that the matter of my faulty hatches was taken up by me with the Muskogee Poultry As-ociation or that they kicked to me about it. I do not remember that they made it pretty hot for me there in Muskogee. Mr. Ed Hastain kept the business books of the business operation. I remember Mr. Hastain working as Mr. Lieber's active representative, and keeping books and accounts. I was mainly engaged in the actual manual operation of running the hatchery. I undoubtedly made book entries and kept records also.

There were some records kept of our operations there at Muskogee, the extent of which I do not remember. There were books kept. There would have been books kept of money received and expended, and also records of eggs received, and chicks sold or chicks turned back. I don't know anything about the existence of the books. They would have been left with Mr. Lieber and Mr. Hastain at the time I left there.

Q. Mr. Lieber testified in the Stone case, that you got disgusted and left and turned the business over to him. Is that true or is it not true?

A. It is true that I left Muskogee after the main bulk of the hatching season was over, and that I went from there to Petaluma, California. The term "disgusted" is an expression of opinion of feeling. I left with no enmity or quarrel with Mr. Lieber, because I recall that he gave me $100 that he did not legally owe me, to enable me to go to Petaluma, gratuitously. I was receiving as a small salary or wage from Mr. Lieber or this corporation, and enough to enable me to exist there, and the $100 that Mr. Lieber gave me was [fol. 810] a gratuitous gift because my wages had been too small to permit me to have any surplus, and there was no profit shown from this operation. I left the employment of Mr. Lieber and this corporation and went to Petaluma.

Q. That is, you gave up your 49 per cent of the stock and skipped out, didn't you?

A. I do not think that I skipped out when Mr. Lieber gave me $100 gratuitously to go to Petaluma.

Q. But you skipped out of Muskogee?

A. I left Muskogee.

Q. What time did you leave?

A. May, 1912.

Q. What date?

A. I do not know.

Q. Wasn't it during the hatching season?

A. There were some eggs still in the incubator.

Q. Wasn't it during the hatching season?

A. Yes. The hatching season in that locality may go through June now; it did not then. It was a very hot locality, and June chicks would be very unprofitable in that locality. I left during May when the hatching season was on. I left at night if the train left at night.

Q. You didn't go around and tell the people you owed money to that you were leaving?

A. I did not skip any personal debts there. If the hatchery owed any debts, Mr. Ed Hastain was left in charge of this operation and was secretary of the company, and hence I did not leave any debts in Muskogee personally.

Q. Did you go around and tell your acquaintances that you were leaving before you left?

A. I had very few acquaintances there. I had been very busy while being there. I don't remember any business of a personal nature one way or another. I never go back to Muskogee. I have no personal friends in Muskogee.

[fol. 811] Q. Did you ever go back to Muskogee?

A. I did not.

Q. Never been back to see your old friends?

A. I have not, I have no personal friends in Muskogee. I remember that Mr. Lieber took a considerable number of chicks, but don't remember how many, nor do I know how many pullets he raised from the chicks he took from the hatchery.

Q. Do you know whether he got more than 500 chicks out of it?

A. You said pullets.

Q. I will say chicks, both pullets and cockerels—do you know whether he got more than 500?

A. I don't remember how many he took.
Q. Did he ever make any money out of it?
A. No.
Q. Did you ever make any money out of it?
A. No.
Q. Nobody ever connected with it made any money out of it?
A. No one made any profit.
Q. No one made any money out of it?
A. No one made any money out of it.

I do not know whether that incubator is still there, but I have every reason to believe it is not. It was torn down. It was located in a building, part of a building, in the very center of an oil booming town. It was right adjacent to a theatre and a hotel.

Mr. Lieber never built another incubator like it, to my knowledge. I don't know whether he did. I have built other incubators since that were similar in principle of operation to the Muskogee incubator. I never built another incubator exactly like the Muskogee incubator. I built some other incubators, but they were different.

[fol. 812] I tried to get somebody to put more money in the incubator out there in Petaluma, but did not succeed.

I next appeared at a place called Port O'Connor, Texas. There was a land development promotion scheme there. That boom town was a small town—it was a small town being developed or boomed by a real estate operator who employed me to come there and work and build a hatchery. I built the building there for a hatchery and made part of the interior installation in the fall of 1912. The boom town or real estate development referred to was not going so good, and the Real Estate company were moving out of the town back to San Antonio, and did not care to employ me to stay during a hatching season and operate any incubator. I never finished that incubator in Port O'Connor. I was simply discharged from my position because of the general failure of the company that was developing it, and their desire not to go ahead with the plant. The rated capacity of that incubator or capacity provided for in the building, was to have been in the vicinity of 100,000 eggs. It may have been stated as 150,000. The interior construction was never completed. My memory is that the framework of the incubating chambers, or the partitions between them, were

completed, and that a single compartment was fitted up with trays, and the machine heated up, and a single hatch made in this one compartment, the other compartments being closed.

Referring to Defendants' Exhibit D-1, in the Cooley case, an article entitled "Hatching Chickens by Wholesale," refreshes my recollection as to the prosepective size of the [fol. 813] hatchery. I remember that structure, I built it myself. The rating, I think, in that, was ten compartments of 10,000 eggs each, and on the other side, open trays arranged without turning devices, to half of that number. As the entire installation was not made, I have no accurate memories of it, I am testifying about a capacity that was predicted or stated that was planned. It was never fitted or used except one chamber heated up to demonstrate heating control, and it was not operated at any time, and no attempt made to operate the thing commercially. The one compartment that was built was about the same size as the compartments in the Muskogee plant, but it was fitted with the device for turning the eggs by turning over the whole compartment. Therein it differed from the Muskogee incubator, quite so, in that respect.

It had a fan installed at a different place from the Muskogee machine at the end of the row of incubating compartments, and the principle of air circulation planned and partly constructed was that of blowing the air into a long passageway, from which it would enter into the individual hatching chambers and then pass through them into a return duct, and so return to the fan.

This demonstration hatch I have testified about in Port O'Connor was made late in the fall of 1912, shortly before I left there, but not in the hatching season. As to there being two cases of eggs, I think your memory there seems to be better than mine. I think probably two cases, 720 eggs in an incubator of 150,000 capacity. The purpose of making that hatch was merely to test the operation of the [fol. 814] continuity of our heat, chiefly, which having no gas, we were using a gasoline burner which was decidedly an unproven thing. I had previously operated with gas and it was to work out and demonstrate the regulation of the gasoline burner was the chief purpose in my own mind of running the hatch. In that demonstration hatch at Port O'Connor we probably set the eggs all at one time. If two

cases were purchased at one time, they would have been set at one time. I have no detailed memory of that. I don't remember more than I have told you.

That compartment itself in which these 720 eggs were set had a very large capacity. My impression is that was rated at 10,000, and that the rating was obtained by a plan of putting those eggs in on their sides very close to the next tray so that they were slotted trays, trays made of strips, a method which I had observed in Petaluma on my visit there, and which I was installing in this machine, with the added device of turning the eggs—a labor-saving device. After that one demonstration hatch where 720 eggs were used in a compartment designed to hold 10,000 eggs, that incubator wasn't used. It was not in the hatching season, and the purpose of the test or demonstration was not that of testing the air flow or the use of the hatchery as a whole, it could not have been presumed to have been so. It was merely for the purpose of testing the heat and temperature control of this heating device. I have no reason to know that incubator at Port O'Connor was not used after that one demonstration, but I do know it was not a poultry country. I do not know that it was not used after that demonstration, but I presume that is correct.

[fol. 815] Q. This article in the Technical World of April, 1913, where it said, "There is now in operation at Port O'Connor a machine capable of turning out a chick every twelve seconds for twenty-four hours a day and for three hundred and sixty-five days in a year"—that isn't true?

A. No. That is a statement made, as in many of these mechanical and similar magazines, as to new constructions, when the impression is given that something is in operation when they had information as to its planning or building.

That isn't so, it is a presumption. The article says: "There is now in operation at Port O'Connor a machine capable of turning out a chick every twelve seconds for twenty-four hours a day, and for three hundred and sixty-five days in a year." I am not responsible for that article. It is not an exaggeration, it is a misstatement. The picture which appears in the same article over on the next page, is not a picture of anything at Port O'Connor, it is a picture from the Muskogee plant. I don't know whether

there is anything in that article which says that is the Muskogee plant. There doesn't seem to be any statement as to where this Muskogee picture originated. A reference is made to the Muskogee hatchery. The article is written by a man named George F. Paul, whom I do not know and never met, and the photographs were furnished him by me, and some of the data. He has used his imagination and speculation in writing up the article, as shown from the data he had. I did not see proofs or copies of the article and am not responsible for the misstatements made. I never denied those statements in that publication.

Regarding the article appearing in the Boston Sunday [fol. 816] Globe, November 10, 1912: "At Port O'Connor, with more eggs and more funds at his command, Mr. Hastings has far excelled his previous efforts and has here begun operating what is unquestionably the greatest hatchery ever built," at the date of publication, the Port O'Connor plant had not been completed even to the state that it later was. The statements made are speculative on the part of the writer, from information and photos furnished by me at various times in other publications. I deny the reponsibility for that statement except the quotations which I presume the writer has directly quoted me under direct examination. I never saw the writer of that article. I never knew the writer of an article which appeared in a St. Louis paper. I sent him photos. I remember corresponding with such a man, sending him photos and clippings, and writing him letters, but I do not know what statements made there he might have taken from statements made by me in correspondence and what statements he might have made, as is customary in Sunday newspapers and similar types of articles concerning new devices and inventions.

Q. As far as you know, the only source of his information was what you furnished him, isn't that so?

A. I don't know as to that.

Q. I said as far as you know that is the only source of information he had, from which this article was written?

A. As far as I know, yes, I can presume that he might have seen clippings of other articles, or he might have been in correspondence with Mr. Hickox or other men who were interested and writing similar articles. Mr. Hickox didn't know anything about the Port O'Connor plant. No other

[fol. 817] article had appeared about my Port O'Connor plant before this article that I know of.

This article says, in referring to my Oklahoma operations: "The seasons were severe and the hatches were disappointing to many customers." That is a statement of the truth. We were operating custom-hatching there in a country where very little was known about producing good fertile eggs, and as I have stated, the hatches received by many of these customers, especially earlier in the season, were disappointing.

I do not admit any failure at Muskogee of hatching successfully from a good quality of eggs. I admit the commercial failure, and call your attention to the fact that we made the absurd mistake of offering to hatch eggs at the ridiculously low rate of one cent an egg. We had many disappointing hatches.

Regarding the statement in the Sunday Globe article: "With the improved mechanism, Mr. Hastings is finding out other ways to better the hatching results of the cruder machines." that refers to previous machines that I had built, as interpreted by that writer from information that he may have gotten from me or from other sources.

After I left Port O'Connor I returned to New York City. Strictly speaking I did not get a job with the Hall Incubator Company. I became associated with Mr. Peters, and I think, other officials of the Hall Incubator Company, in the capacity of establishing a corporation for the purpose of manufacturing incubators in accordance with the use of mechanical or forced draft; in accordance with previous incubators.

[fol. 818] While working at Little Falls for the Hastings Corporation, associated with the Hall Incubator people, I built a section with the view of making a manufactured incubator as entirely distinct from the hatching plants that I had previously built in place. They never got on the market. The reason was that a single compartment was built with a view of developing the type of manufactured incubator in sections. That is a sectional type incubator, for manufacturing purposes as distinct from a hatchery or incubator built in place, as the previous machines, which is the reason for the distinction. The design of this incubator was that of a fan or forced draft machine with the fan and heater in a separate detachable end member,

against which were to be placed incubating sections, with a view of expansion or extending these sections as the incubating capacity would increase.

At the insistance of Mr. Peters of the Hall Company which was a manufacturer of a hot water type of heater, I tried the use of a hot water heater for a single section of this incubator, with a view of finding if such hot water heaters could be adapted to such use—I protested in advance that I doubted if it could be—Mr. Peters being the manufacturer and seller of such heaters, wished me to test it out, and the result was that I cooked or overheated and destroyed the first and only batch of eggs in my experience with incubation up to this time. This displeased Mr. Peters and discouraged him with going ahead with the construction of the type of machine, and such construction was indefinitely postponed. Mr. Peters offered me a position as sales manager of the Hall Incubator Company, which I [fol. 819] refused, and I left Little Falls, New York, and went to San Francisco in connection with some publicity work promised me there in connection with the World's Fair being built there at that time. My connection with the Hall Incubator Company and my attempt to make incubators got nowhere. That was in the spring season of 1913.

The next time that I appeared upon the scene of incubation was in 1917 and 1918, at Tiffin, Ohio. I remember that on my way to Tiffin, Ohio, I stopped off at Cleveland and saw Dr. Smith. I do not remember asking Dr. Smith to give me a license under his patent. I do not deny it. I went to see Dr. Smith with a view of discussing any possibility of our joining forces, as we at that time were both interested in incubators of the forced draft type. Believing myself to have been the original inventor of this type incubator, and knowing that Dr. Smith was then building and operating and interested in similar types of incubators, I thought that he might see fit for us to join forces—some agreeable arrangement to develop the industry. I found he was disinclined and very suspicious of me and refused to let me see his hatchery. I therefore decided that he did not care to do business with me.

Q. As a matter of fact, Mr. Hastings, did you not ask Dr. Smith for a license under his patent, and as a consideration for that license, didn't you agree—didn't you offer to agree that you wouldn't do anything to upset Dr.

Smith's patent? In other words, you offered the price of silence for a license under Dr. Smith's patent—isn't that true?

A. I do not remember the detail of any suggestions or [fol. 820] correspondence that I may have had with Dr. Smith at that time, except the general intent to co-operate with him in this field instead of competing with him. I do not remember that the co-operation I asked for was a license under Dr. Smith's patent. I do not deny it. I do not remember the detailed conversations or correspondence with Dr. Smith. I remember the intent of them, and without refreshing my mind on dates, I couldn't say, but it is my impression that Dr. Smith's patent was not issued at that time, it may have been, but if so I do not know that I knew it. I know he was operating a similar means of incubation.

I then went to Tiffin with Mr. and Mrs. Hoppel. She had been the one interested in operating the hatchery, and Mr. Hoppel desired me to come there and take over the opration for the reason of relieving his wife of work he did not wish her to continue. I built some hatching compartments in a building that was the adjoining room to the incubation rooms that they had, and did operate in it successfully. At Hoppel's plant I tried out a method of hatching very much more like the Smith Buckeye devices than I had used in the past, but the reason was that Mrs. Hoppel had seen the Smith Buckeye devices and she believed me to be the original inventor of that type of incubation, and therefore did not conceive that she had no right to have such machine built by me. She wished the construction to be of the type it was made, because that impressed her as being a construction that she wanted to use because it was more similar to incubators she had seen in operation.

Q. As a matter of fact, wasn't it because you wanted to [fol. 821] see what that method would do in comparison with your previous experiments, did you not so testify? While you are pausing to think about the answer—did you not so testify in the Cooley case?

A. I would rather answer your question without looking at my testimony in the Cooley case and the reason is that

I was interested in seeing if the method used would operate. It was in some ways a simpler and less expensive method than mine, because it was less restriction of air flow—did not require as powerful fans.

Referring to my testimony given in answer to cross-question 146 at page 121 of the Cooley record I will stand by that testimony. That Hoppel affair wasn't a success financially. It wasn't a success, and I will give you some reasons: I was operating there in a business established by Mrs. Hoppel. It was quite large and it had elements of failure in her hands, due to the fact that they were operating with home built hot water pipe incubators. I supplemented that capacity with the fan compartments referred to. The hot water machines were very poor in operation, and my fan chambers did give better results. The gas pressure was unsatisfactory, and we had a severe season, and owing to failure of gas pressure, we at one time spoiled quite a large batch of eggs in the Hoppel's hot water machine, but did not spoil the eggs in the fan machine at the same time, because of much less heat required, the gas pressure being sufficient to handle that machine but not the hot water. While I was at Tiffin I published or composed this article which appears in the Count-y Gentlemen of August 10, 1918.

The book entitled "The Dollar Hen" contained a great [fol. 822] deal of practical information, and contained considerable speculative discussion of further development in the poultry industry.

Q. I call your attention to the top of the third column of the first page of the Country Gentleman article, where it says: "Ten years ago, I wrote an impractical poultry book."

A. I see the statement. May I add to that statement, by saying that ten years ago, at that time (referring to "The Dollar Hen"), I made statements concerning incubation which were considered impractical at that time, and were so looked upon by the poultry journalists, but that they were prophetic, in many respects excellent indications of later developments in this method of incubation and also other features of the Poultry Culture.

Q. As a matter of fact, what was said was: "Ten years ago I wrote an impractical poultry book." You also said "it was impractical because it told too much about how the

poultry business was going to be conducted in the future instead of how it was being conducted at the time."

A. That is fine—that represents what I have just said.

Q. And in 1918, you said it was an impractical book?

A. Prophetic books and prophetic statements are always considered impractical at the time they are published, and are impractical in details. They often do, as this book did, prophesy the developments which the writer for-sees ahead of others in the industry.

After I left the Hoppels I did nothing more with the commercial industry of incubation. I went into work that I have been at as a means of support most of the time since [fol. 823] I left the Department of Agriculture—that of a writer of varions publications. I occasionally wrote some on poultry and incubation in the years in which I was following that art, and have since chiefly written on the subject of human nutrition, animal nutrition and many other subjects. I dropped incubation.

Q. You have always considered that the reward which Dr. Smith got really belonged to you, didn't you?

A. As a primary inventor—if my primary invention had been considered patentable I would have considered that the returns, as an inventor, from forced draft incubation, would have belonged to me, but it was held by the Patent Office that the method was not patentable because it was an adaptation of devices and known principles in the art of ventilation to a new purpose, and as such was not patentable. Accepting the Patent Office's interpretation, I see no basis upon which a monopoly should be granted to me or Dr. Smith or anyone else.

Q. And you have always been motivated, have you not, by a comparison of the success which Dr. Smith obtained over the failures you obtained?

A. I think it natural, that an original inventor, a man believed himself to be the original inventor of a basic principle, which another man later develops and attempts to monopolize, would feel some element of resentment that he did not share in such returns.

As to Judge Westenhaver's statement in discussing the article in the Poultry Culture Magazine and other magazines that: "These articles discus functions, principles and results and indulge in rose-colored predictions," the

article in Poultry Culture specifically was published in [fol. 824] February, 1912. It has written into it much optomistic, or if you please, rose-colored predictions of the large developments and revolution in the incubation industry, which forced draft incubation anticipated, and has since materialized. The article in the Sunday Globe is a typical Sunday newspaper write-up of a speculative, inaccurate and loose nature.

Q. And no one that was ever connected with you, either Mr. Davis, the Muskogee people or the Port O'Connor people, ever made any money out of your schemes, did they?

A. No one connected with any of those three enterprises was in the incubation or hatchery business or knew anything about it.

Q. The answer to my question is that they did not?

A. And they did not make any money out of it.

I cannot testify positively that Mr. Searle before he wrote the article came down and saw the plant. I knew Mr. Hicks very well, but I do not distinguish Mr. Searle in memory. He was Mr. Hicks' assistant, and my impression is—of which I cannot be positive—that Mr. Searle possibly covered the Muskogee poultry show, which was held at about that time, and therefore was probably one of many visitors that came over to see the plant, which we were just then constructing and running a test hatch in at the time of that show. My memory is Mr. Hicks visited that plant at Muskogee somewhat later in the season than the time we were speaking of. I think he came after the article appeared.

Q. You testified in the Cooley case, on page 144: "The names signed to any of these articles that have been shown [fol. 825] at this trial are written by men that, so far as I know, did not visit the hatchery: That is a Mr. Searle who signed the article in the Poultry Culture, and Mr. Paul in some other publication, whom I did not know personally."

A. The statement is absolute in regard to Mr. Paul and Mr. Searle. I have just given my impression of the probabilities of that. My memory is not distinct.

Q. That is, you have no recollection of his being there?

A. I don't recall the man. I knew Mr. Hicks very well. He was merely Mr. Hicks' assistant, writing under his direction.

Q. When did Mr. Hicks visit you at Muskogee?

A. Sometime during the hatching season, that is all I can remember. I don't remember the date.

Q. Do you remember Mr. Hicks discussing with you the possibility of opening up a similar hatchery at Topeka?

A. Mr. Hicks was interested in that and tried to interest Senator Capper, with whom he was working, in such an operation.

Q. Do you remember saying to Mr. Hicks that you were unwilling to undertake it because your efforts at Muskogee had not been demonstrated sufficiently to make you confident you could do it—do you remember making such a statement?

A. I don't remember the exact statement, but as a commercial success in custom-hatchery, with miscellaneous foreign eggs, the statement would have been a very logical one. It was commercially not a success.

Q. It was not sufficiently a success as a business proposition to encourage any further development at that time, is that correct?

[fol. 826] A. In that region. That is why I want to Petaluma where the interest was well developed and there was plenty of eggs to hatch.

I did not do anything at Petaluma. I had no personal introductions, and those fellows didn't give me a job.

Mr. Ely: I wish to introduce as Plaintiff's Exhibit 1, the testimony of Milo M. Hastings, at pages 75 to 154 of the Cooley record, and also the exhibits which form part of the Cooley record, namely what was then the Defendants' Exhibit D-C, a pamphlet entitled "A Million Egg Incubator"; Defendants' Exhibit D-D, the drawing of the Davis hatchery of 1910, incorporated in that record; Defendants' Exhibit D-E, a certified copy of the abandoned application of Hastings; the article in the Boston Sunday Globe, which was Defendants' Exhibit D-G in that case; the drawing of the Hastings Port O'Connor hatchery, which was Defendants' Exhibit D-H in that case; the article "Hatching Chickens by Wholesale" in the Technical World, Defendants' Exhibit D-I; the drawings of the Hastings Muskogee hatchery, in that case, Defendants' Exhibit D-J; the article in the Country Gentleman of August 10, 1918, which was Defendants' Exhibit D-L.

Redirect examination.

By Mr. Greer:

I first read a book, and I think a patent on refrigeration by Mr. Cooper, and then went to see Mr. Cooper, with a [fol. 827] view of interesting him as an engineer in the possible development of a process of incubation which I conceived to be a use, in incubation, of his device in refrigeration.

Q. Is he the same Mr. Cooper who is the patentee under Patent 754749.

A. Madison Cooper, a ventilator expert—I believe it to be the same. It was a refrigerating patent—it was the only one under consideration.

Q. You were also asked if your activities at Muskogee in connection with the use of a fan in your incubator, were experiments or not. Will you please state to us what was the result of any such experimental use of a fan in connection with that incubator?

A. In the very material increase in size from the Davis to the Muskogee incubator, the question of the size of fan and its air-driving power was one which would not have been known and could only be established by a trial. We therefore made a trial use of the fan which Mr. Lieber had, and upon finding it to be of insufficient air-driving power, we substituted the larger blower which was found to be of sufficient power.

On cross-examination I was asked with respect to changes made in the drawngs which have been introduced in this case as Defendants' Exhibits 21, 22 and 22-A, over the drawings which were introduced in evidence in the Cooley case. I suggested such changes being made, because the drawings in the Cooley case were inaccurate in certain details.

Regardless of any contemporaneous data, such as photographs, drawings or anything else, I have positive independent recollection of the construction and operation of [fol. 828] the Muskogee 1912 incubator. From that standpoint alone I will state that the drawings, Defendants' Exhibits 22 and 22-A are not complete or detailed working drawings of all mechanical details, but insofar as they show parts, arrangement and essential principles of use, they are accurate of the machine as it was used commercially and

successfully during the major portion of the hatching season at Muskogee.

I was also asked if the fan shown in the drawings which were introduced in the Cooley case was not smaller than the fan shown in Defendants' Exhibits 22 and 22-A. Those drawings are not to the same scale, not to the exact same proportion. The drawings in the Cooley record are smaller.

On cross-examination I was also asked questions with regard to the testimony of Mr. Lieber in the case of Buckeye Incubator Company, et al., v. Stone. Referring to the report of the Master of Chancery on page 5 of the Stone case, the following quotation occurs: "John G. Lieber, who was financially interested in the Hastings hatchery testified that hatches of about 50 per cent. were obtained." That is a correct statement. In referring to the Hastings hatchery, that refers to the Hastings hatchery of 1912 at Muskogee.

Recross-examination.

By Mr. Ely:

Q. In regard to that testimony of Mr. Lieber's do you know also whether or not it is correctly stated by the Master, immediately following the quotation read you by defendants' counsel: "It is apparent, however, that Lieber [fol. 829] was interested and more or less hostile, with the hope that at some stage of the litigation of Smith's patent and the infringement suit brought by the Buckeye Incubator Company v. Cooley, he might receive a return of money he lost in the Hastings venture." Do you know about that?

A. I know nothing about this testimony nor how Mr. Lieber may have felt after I left Muskogee, but the fact that he had interest in a prospective patent for which I had then applied, as has been brought out in this testimony, would give a reasonable basis for that presumption.

Q. Also, do you know whether or not it is true, as stated immediately following: "His knowledge (Lieber's knowledge) of Hastings' machine is dependent upon memory. His knowledge of the operation is rather vague, and the fact remains that the device was abandoned and it was not a success." Is all of that statement true, or what part of it is true?

A. The statement would seem reasonable to me, interpreted that the commercial operations of the incubator as a money making factor were not a success.

Mr. Lieber was busy on other things, but his office was in the same group of buildings, and he followed the operations to a considerable degree, and was interested in them, but he had many other business enterprises which distracted him somewhat from a close observation of the incubator. He was not an incubator man, and his detailed knowledge would not have been great. In regard to my changes in the drawings of the Muskogee and Davis hatcheries, over the drawings in the Cooley record, I discussed the drawings in the Cooley record with Mr. Schaefer (of the firm of Toul-
[fol. 830] min and Toulmin). I had the Cooley record before me at the time, but at that time I did not know that further drawings were to be made. Toulmin & Toulmin made such drawings and mailed them to me and I criticized them and the alterations were made by my criticism by correspondence. Recently I had a conference with someone from Mr. Toulmin's office, within the last two or three weeks.

At the conference I read some of these decisions that have been passed out on the Smith patent. I discussed the matter of these decisions with someone from Toulmin & Toulmin's office before I went on the stand. I am somewhat familiar with the language used in the various Courts in disposing of my so-called prior use, by reading. I would not be able to recall them all by detail. I am being paid for my time here. I positively have no promise of any more pay if my testimony is instrumental in upsetting the Smith patent.

I believe, except for a little exchange of correspondence, this makes the fourth day that I have spent on this work.

Redirect examination.

By Mr. Greer:

With regard to the record in the Cooley case that I said was shown to me at the time of my conference with Mr. Schaefer, I obtained that record from the office of Kiddle, Margeson & Hornidge. It was returned to that firm, the same day on which Mr. Schaefer and myself consulted here in New York.

[fol. 831] Deposition of NORMAN B. HICKOX Taken Nov. 11, 1933, at Chicago, Ill.

NORMAN B. HICKOX, a witness called on behalf of the defendants being first duly sworn according to law, testified by deposition which deposition was offered and admitted in evidence as follows:

Direct examination.

By Mr. Rowan A. Greer:

My name is Norman B. Hickox. I am 46 years old and reside at 725 Michigan Avenue, Evanston, Illinois. I am employed by the Curtis Lighting, Inc., at 1123 West Jackson Boulevard, Chicago. The Curtis Lighting, Inc., manufacture and sell lighting equipment. I have been with my present company for 17 years. During all of that time my principal office was located in the City of Chicago, Illinois. I lived in Muskogee, Oklahoma, from the early part of 1910 to the early Fall of 1912. I was the contract agent or commercial manager for the Muskogee Gas & Electric Company. Because of the nature of my business I knew practically every business man and commercial business in the city. I was familiar with the general business and economic conditions in Muskogee during the years 1911 and 1912. During the three years I was in Muskogee the city was in the height of its boom. The big growth of Muskogee started in 1910. Everything grew very rapidly and values expanded, the city expanded during those three years. It was typical Oklahoma boom country with all that that brings. I knew a Mr. Milo Hastings in Muskogee, Oklahoma. He [fol. 832] was in the hatchery business, in that city. I first became acquainted with Mr. Hastings in the late Fall of 1911 and knew him for some months after that or up into the early part of 1912. I became acquainted with Mr. Hastings in the same manner that I became acquainted with any new man that came to the city and engaged in any business in which he would use either electric current or natural gas that our company furnished; by contact with him in order to arrange with him for supplying such service as he would need in his business. I stated that he was engaged in the hatchery business. He had what I would call a mammoth incubator. I guess that is the best description I can think of

for it. It was in a sort of a back yard, back of the Hinton Theatre and also sort of back of some small buildings or shacks that Judge Lieber had, in one of which he had a movie theatre; and I describe it that way because the Hinton Theatre is on a corner, and from North 3rd Street it would be back of the Hinton Theatre Building; from the other street it would be back of Judge Lieber's shacks and to the side of the Hinton Theatre Building. It was right in the business section of the city, well, within two blocks of where the residence portion began but it was down in the business section of the city, very close and very handy to the city. I visited that incubator and saw it myself. I kept a kind of data or memoranda or other documentary evidence relating to my life in Muskogee, Oklahoma. It consisted of various records and copies of clippings and articles, photographs that were pertinent to my work and which at the time I left Muskogee I was enough interested in to [fol. 833] bundle up and retain and save. I am now handed an album or scrap book marked on the outer cover "Photographs" which has likewise been marked for identification in this case as Defendants' Exhibit No. 26. This is the book—I can tell you from the outside, a brief glance—in which I gathered together and personally glued in such of the photographs and other interesting items and clippings covering my Muskogee life or activity that I was especially anxious to save because of their sentimental interest, shall we say, and which album was produced by me and put together by me. This album was all made on one day. It was made by me after I moved into my home in Evanston, about thirteen years ago. As to the source from which I obtained the various items that appear in the album, I took my old dusty bundle that I still had marked "Muskogee" and opened it up and went through it and selected from the mass of material that I had these particular items because they were of particular interest to me. That book, marked for identification Defendants' Exhibit 26, has been in my possession ever since, excepting briefly for a few days recently. I gave it to Mr. Gillard—I loaned it to Mr. Gillard, I should say. He is an official of the James Manufacturing Company. It is not in the same condition that it was in when I gave it to Mr. Gillard. On the first page there has been a carbon copy of a typewritten article attached to the place that was originally blank. On that same page are two

red stickers, or red-bordered stickers, I should say, that were not there. Back in the Hastings Hatchery section [fol. 834] there is one page that has evidently been taken out and put back upside down. But all the pages are here as I know them because I have looked through the album often, and there is nothing that has been inserted that is not mine. I should have said that my pages were not numbered. I see that someone has numbered them. The pages have been numbered consecutively. Otherwise there is not the slightest difference in the album or the scrap book from the condition it was in when I turned it over to Mr. Gillard. And with respect to the typewritten article appearing on page 1, that is a carbon copy of the publicity article that I wrote in Muskogee and which I saved for my own record. I gave it to Mr. Gillard but I gave it to him loose; it was loose. At the same time that I gave him the album. And I obtained that from the same source that the other items came from. I went back to my old bundle and opened it up and found it near the top.

(The defendants then offered in evidence the scrap book or album and its entire contents, previously marked for identification Defendants' Exhibit 26 as Defendants' Exhibit 26.)

(The album in question was marked "Defendants' Exhibit 26, George W. Johnson," the custody of which is covered by the stipulation at the end of this deposition.)

The witness then resumed under direct examination by Mr. Greer:

I am asked to turn to page 1 of that album and tell who [fol. 835] prepared that typewritten article that appears on that page 1. I did. My purpose in preparing that was for publicity purposes. It was prepared, well, either right at the last of 1911 or the very early days of 1912. It was prepared in seven or eight copies and each one of the copies with the exception of this copy of it was sent to different electrical publications with a set of photographs, in the usual manner that we always sent out releases for publicity in Muskogee. The activity of an incubator was quite unusual, and one of my duties in my position at Muskogee that I was charged with by the Byllesby people was to see that Muskogee and our company received as much publicity as

possible. To do this we naturally selected the unusual uses for electricity and gas and made photographs of them, wrote up stories and sent them out to the various electrical trade papers and in that way received considerable publicity for Muskogee. To my knowledge there was no other hatchery comparable in size and capacity in Muskogee, Oklahoma, with that of Mr. Hastings' that I have referred to, at that time. I am asked to turn to that article that is attached to page 1 of that album, Defendants' Exhibit 26, and look at the second paragraph on the first page. My attention is called to the fact that it refers there to "Figures 5 and 7 show how these chambers are constructed and how these trays are set in." What I meant when I referred to as "Figures 5 and 7" was two of the photographs that were sent out with the article. I believe that one of those photographs appears in this album, possibly both. There is no photograph of Figure 7 here but the photograph that I am marking with pen "Figure 5" is what I referred to. I will [fol. 836] mark it right here on the right edge. Just mark it "Figure 5".

(The photograph in question was marked "Figure 5. N. B. H." by the witness.)

A commercial photographer in Muskogee by the name of Greene took this photograph that I have marked Figure 5. He took it for me. I requested him to take it, and I was present when it was taken and showed him where to point his camera. It was taken the early part of 1912, is as close as I could come as to when it was taken. Now I am asked to look again at page 1 of this typewritten article which appears on page 1 of the album, Defendants' Exhibit 26, where the following sentence occurs: "The amount of moisture in the air is governed by the moisture introduced at the fan as is shown in Figure 2," and asked to point out in the album what I referred to as Figure 2 there. The picture is here. It is a picture of the fan. The page that is upside down that has been numbered—I can't read it. I can mark the photograph. I have marked the photograph "Figure 2".

(The photograph in question was marked "Figure 2, N. B. H." by the witness.)

The same photographer, Mr. Greene, took that photograph at the same time as the other, under the same circumstances. They were all taken that way. Now, turning over to page 2 of the typewritten article, in the first line the following sentence occurs: "Upon entering the hatchery we [fol. 837] are first taken into a small anteroom, as shown in Figure 1." The photograph is here in that album which was referred to as "Figure 1". That photograph is on the page numbered 82 in the album. I mark that photograph "Figure 1" also.

(The photograph was marked "Figure 1, N. B. H." by the witness.)

In this typewritten article on page 1 of Defendants' Exhibit 26 and referring to a thermostatic arrangement the article states as follows: "This thermostat is set to operate at a designed temperature so as to close off the gas when the room becomes too hot. There are two other such arrangements on the same line, one of which is shown on Figure 6." Figure 6 appears in the album also, on page 82, and I am marking it "Figure 6".

(The photograph was marked "Figure 6, N. B. H." by the witness.)

Further on in this article which appears on page 1 of Defendants' Exhibit 26, in the paragraph next to the last on page 2 thereof, the following occurs: "The attendant will be seen in Figure 3 pulling out trays of eggs for turning, which is done three times a day by hand." I indicate what there is in the album that was referred to as this Figure 3; it is on the page that the numbering is not clear, the same page that Figure 2 appears on, the page that is upside down.

(The photograph in question was marked "Figure 3, N. B. H." by the witness.)

[fol. 838] I do not recall the various publications to which I sent this article—not exactly—but some of them are not in existence today. I can give you the name of the McGraw-Hill Company that published several electrical papers, to which editor we always sent all of this type of material. We also sent it to a publication that was formerly issued in Chicago called "The Electric City", the editor of which

paper got all of my material too. It was also sent to a publication then in existence called "The Western Electrician", a paper in which a man named Ainslie A. Gray was interested and one of the editors of which was Howard Ehrlich, that paper not now being in existence. It was also sent to the editor of "Popular Electricity", which editor received all of our articles of this kind; and two or three others that I can't remember. In sending this article I also accompanied the article with these photographs, copies of which I have marked. That was our custom in all cases. Turning to page 81 of the album marked Defendants' Exhibit 26; that page carries a cartoon that was published in the Muskogee Times-Democrat and a single column article six or seven inches in length that appeared on the same page. As to when that article appeared; I had the entire newspaper in my bundle and I clipped out these articles when I made up my scrap book and saved the heading which reads: "February 29, 1912". That article uses in the second line in the second paragraph the following language: "She, or he, was hatched under electric light in the New Hastings' 30,000 egg hatchery on 3rd Street, just north of the Hinton Theatre." The Hast- [fol. 839] ings' hatchery that article refers to is the same one we have been talking about. The one in Muskogee. Turning to page 82 of the album which has been introduced in evidence as Defendants' Exhibit No. 26, those photographs appearing thereon represent views in the hatchery that was started by Mr. Hastings and we have already described them in our testimony as photographs 1 to 6. The photograph that appears there is one of Mr. Hastings. The elements or parts that are shown in the opposite photograph, the one opposite to the one that shows Mr. Hastings in Figure 6, the pipe coming down is the gas supply. The batteries there are used to actuate a home-made valve, float valve and to the right there are two long bars that were made of zinc and in the ends of these bars, opposite to the end from which they were supported, there is a contact point arranged and a little cup of mercury. When the temperature became too high these zinc bars softened a little bit and allowed the contact to be closed there and actuated the gas valve to turn off the heat. I can state that that device was actually installed in the Hastings incubator at Muskogee in 1912. I saw it there, examined it and had this

picture taken of it because I thought it was so interesting. Turning to page 83 of the album, Defendants' Exhibit 26; this page has an article that was clipped from The Electrical World, and a photograph of a man's hand holding a chicken. The editor of The Electrical World unquestionably took my publicity material with the pictures and made this article from what I had sent him. It does, I believe, quote certain sections of my typewritten article and some of it appears to have been rewritten. That article appears to be dated [fol. 840] July 6, 1912, and I am satisfied it appeared in the July 6, 1912, issue of The Electrical World. Now, looking at the photograph or illustration marked "Fig. 2" in that article; it shows the fan that moved the air through the incubator and the pan of water underneath it that was used to introduce moisture. It shows in the extreme left, a part of a tray of dry batteries. On the extreme right it shows another one of those long zinc bar thermostats in it. It only shows part of it. When I say "in it", I mean by that the picture. This picture was taken in Mr. Hastings' incubator in Muskogee, and shows how the fan was set. I can't give a verbal description of it from memory, only from looking at the picture. Looking at the picture to refresh his memory, the witness said: The fan was set to push the air through some section of the incubator here that is not shown in the picture. And I can tell you this, that the camera, when that picture was taken, was set down near the floor in a doorway from which we had to remove the door or open the door to look in here. This was an inside part of the machine. In other words, when you entered the incubator, the fan was not visible unless you looked inside this door. If you will look at the picture Figure 1, below Mr. Hastings' waistline there, and behind his legs, is that compartment with the door closed. It is visible in the picture. We simply turned the button and opened that door and put the camera down there and took this picture that showed the fan. We had to have a photographer's light to do it; it was all dark in there. Otherwise I think that the picture shows exactly how it was placed. It shows the wires feeding the fan. I am asked to look at the wall that is shown in that photo- [fol. 841] graph of the fan installation, the wall that is on the right hand side of the photograph as you face it, and state whether or not that wall was on an oblique or at right angles with the wall to which the fan was attached. The

picture shows that it is on a slight oblique. It is very evident to me. That is my recollection of how that installation was in the Muskogee Hastings' incubator. I might—it comes to my mind here—I might elaborate a little further by saying, if you will refer back to Figure 1, that to the right of the door that is closed of that same compartment there is also a piece of wall at an oblique, I think in the same relative relation of this other wall that is in Figure 2 at an angle. The photograph on the left of page 84 is marked Figure 2 and is the same as the photograph or cut appearing of the same photograph marked Figure 2 in the article in The Electrical World. It represents the same thing only it is larger and shows a little more clearly even what is shown in the other one. The photograph to the right of page 84 was marked Figure 3 by me in the testimony and shows Mr. Hastings either removing or placing a tray of eggs in one of the compartments of the incubator. Those photographs were taken by Mr. Greene also and at the same time. The photographs were all taken on one trip. Turning to page 85 of Defendants' Exhibit 26; that is an article about the incubator from Popular Electricity magazine which I clipped out of the magazine at the time I made this scrap book. It has an ink notation on it "November, 1912". I put that writing on there. I wrote it on that page at the time I clipped it out of the magazine just as a matter of [fol. 842] record as to the magazine I took it out of. My article, then, appeared in the November, 1912, issue of Popular Electricity magazine. That was part of the results of my publicity. I furnished the information there. I did not think there was any doubt about it. It is from the pictures that I sent into that place and from the information I sent into it. The photograph on the left of page 86 shows practically every tray in the entire incubator partially or almost entirely pulled out from place with the doors that covered them when the incubator was running—I refer to the Hastings' incubator in Muskogee—having been removed. And I particularly remember this picture because I wanted a picture like that and Mr. Hastings protested very vigorously against exposing so many eggs even long enough to take a picture of them but he finally gave in and let us have it. On the right is the photograph I have previously referred to as Figure 5, which shows one of the compartments of the incubator partially filled up with drawers of eggs. The

turning to page 87 of Defendants' Exhibit 26, which I notice is a newspaper article entitled "Largest Chicken Hatchery in the World in Muskogee". I don't know what paper that appeared in, and when. I don't know exactly. It appeared in one of the Muskogee papers, of which there were two, and it appeared at about the time that this incubator was getting a great deal of attention there, and I believe from the type and make-up and from the fact that I was more friendly with the Times-Democrat people than I was with the Journal that it was in the Times-Democrat. It was [fol. 843] one of the items in connection with my life in Muskogee that I saved. Turning to page 88 of Defendants' Exhibit 26; the photograph on the left is another picture of Mr. Hastings taking out some hatched chickens and broken egg shells from one of the compartments in his incubator in Muskogee. The photograph on the right is a view looking into one of the compartments, showing the chickens hatching or in the process of hatching out; and that photograph also shows the manner in which it was taken by the reflection of the photographer's light on the back wall. It was quite dark and we had a spotlight that we used there to take those pictures. Turning over to the other side of the page, marked page 89 is an article that appeared at about that same time in one of the newspapers in Springfield, Illinois. That article refers to "Muskogee, Oklahoma" and treats or tells of hatching eggs by electricity. It also uses the language, "She, or he, was hatched under electric light in the new Hastings' 30,000 egg hatchery on 3rd Street, just north of the Hinton Theatre". It refers to the large incubator or hatchery that Mr. Hastings had at Muskogee and which we have been referring to in this testimony. Now, then, turning to page 90 of Defendants' Exhibit 26; those are photographs of some hatched baby chicks from the Hastings' Muskogee incubator. The one on the left being simply a publicity photograph of a freak chicken that just had its head out on one side and a large hatched chick on the other side; and the photograph on the right showing probably a couple of hundred baby chicks. They all were taken at the Hastings' incubator at Muskogee; they all came right from the same place and the photographs were all [fol. 844] taken at the same time. I probably visited the Hastings' incubator five or six times. Muskogee was a very

active, growing city, people were coming in all the time, establishing their homes, establishing businesses. And so far as the Hastings' business was concerned, to my recollection every time I was ever there there was business being done. People were either bringing eggs to be hatched or were taking away baby chicks, as I recollect it, from their own eggs or were purchasing baby chicks that were being sold there as freshly hatched.

Q. It was operated there then on a commercial basis?

Mr. Ely: I object to that as leading and also calling for a conclusion.

A. In my opinion it was a going business.

Q. I will ask you whether or not during your life at Muskogee, Oklahoma, you ever heard any adverse criticism of this incubator either with respect to its being a practical operative device or failure while you were there in Muskogee?

Mr. Ely: I object to that as calling for hearsay.

Mr. Greer: I would like to place on the record that the purpose and object of this question is in response to the attack of counsel for plaintiff upon Mr. Hastings at the examination of Mr. Hastings in New York recently.

Mr. Ely: I call attention to the fact that Mr. Hastings' testimony speaks for itself as to what happened in the hatchery.

[fol. 845] Mr. Greer: I will ask the reporter to read the question to the witness.

Mr. Ely: I renew the objection to the question.

(Question read to the witness.)

A. No, I did not.

Q. Did you ever hear any rumor or report or talk of Mr. Hastings skipping town?

A. I did not.

Mr. Ely: I object to that as calling for hearsay.

I knew a Mr. John G. Lieber of Muskogee, Oklahoma. Mr. Lieber had several enterprises of various sorts during the years I was in Muskogee. He was the owner of a string of movie houses; he ran the local legal paper that published the legal decisions and suits and so forth; he had consider-

able property that he was interested in, and he was quite a factor in the growth of Muskogee in certain directions. Because of that and because the judge knew people that were newcomers coming into town I had frequent contact with him during the time I was there. We were fairly friendly. Because of my activities in being in touch with vacant stores and people moving in and moving out that the judge was interested in he liked to see me because I was able to give him information and I liked to see him because he was able to give me information. And I probably sat down with the judge in his office once a week or oftener and talked to him when I would be going by the place. I cannot remember that Judge Lieber ever said anything about the hatchery [fol. 846] to me one way or the other. I first learned that the defendants in this case were desirous of taking my testimony about a month ago. Since that time a representative or agent of the plaintiff, Samuel B. Smith, called on me, a Mr. Taggart. A week ago, Thursday, that would be the 2nd of November, I was in Cleveland. I was just about to leave town; I was just closing my grip in the hotel, and the bell rang and Mr. Taggart introduced himself over the wire and asked me if I was Norman B. Hickox of Curtis Lighting. I said I was. He asked me if I was Hickox that had been in Muskogee. I said that I was. He asked me if I could give him a little time. I said I would be glad to but I was getting out of town and was catching the train in a little while. He came up to my room, introduced himself again. I asked him, I believe, over the telephone, how he had found me and he stated that his associates had made contact with my office in Chicago and had been told here that I was in Cleveland that day. Mr. Taggart identified himself as being connected with the other side of the case and said he wanted to meet me and talk things over with me and find out how I was going to testify. We had a very nice little visit there together. I had the impression first that Mr. Taggart, from what he said, had been to Muskogee and was attempting to check up a little on me to see if I had been to Muskogee, if I knew anything about Muskogee, which is perfectly natural. I would have done the same thing. I also had the impression that Mr. Taggart was making statements about certain things in an attempt to draw me out, which was all right; I [fol. 847] think I would have done the same thing. We talked over the general facts of the case; did not go into any great

detail as I recollect it. And Mr. Taggart told me of his visit to Muskogee and told me about Judge Lieber, where he was, what he was doing down there now, which was something I did not know. I think that is about all that happened. I left Muskogee, Oklahoma, in August, 1912. From there I went to Knoxville, Tennessee, as manager for the Greenwood Advertising Company, There is something in the album, Defendants' Exhibit 26, referring to my leaving Muskogee, in the last pages. On page 99, there is a letter from my direct superior of H. H. Byllesby & Company. It was received by me in the ordinary course of business and I saved it because it was a letter expressing the fact that Byllesby wanted to promote me if I was going to stay with them. On the next page, which is page 100, there is a clipping from the Byllesby Weekly News Bulletin, which came out to all of us, mentioning the fact that I was to leave. On the last page, page 101, there are several clippings from several publications, from Springfield and other places, speaking of my services at Muskogee and where I was going.

Cross-examination.

By Mr. Ely:

I turned over this album, Exhibit 26, to Mr. Gillard the second time that I saw him, about a month ago. I did not keep a record of the date. Some time during the month of October, the early part of October, approximately. I have correspondence with Mr. Gillard that I can refer to and give you the exact date. I have not got it here, it is in my [fol. 848] office. I did not bring it. I would say it was before the middle of October; about a month ago. I can call up my office and tell you the date that I turned this album over to Mr. Gillard. Referring to this article in the album —Figure 4 shows the attendant removing hatched chickens from one of the hatching trays. It is the left hand picture on page 88, which I will mark Figure 4, if you want me to.

(Photograph marked "Figure 4, N. B. H." by the witness.)

There are in this album, ten photographs which relate to the subject-matter concerning which I have testified. All of these photographs were taken by Mr. Greene. They were all taken at my request and under my direction. We were

there together. They were all taken at one time—well, not exactly—but they were taken consecutively, one after the other; they were all taken on one day, within a couple of hours, I mean. I cannot state what day that was—I don't know. It was either the latter part of the year 1911 or the early part of the year 1912, very soon after the 1st of January, 1912, if it was in that year. Well, I don't know that I could fix it that closely by saying it would certainly not have been later than the last of January, 1912, but generally, yes, because these pictures were all taken before this matter appeared, which appeared in February. I am referring in that case to the matter appearing on page 81. At the time these photographs were taken I don't know whether the incubator was full, but the condition that it was in is shown by the left-hand picture on page 86. That is, it had at least [fol. 849] as many eggs in it as is shown in this left-hand picture on page 86. They are shown there in the picture. I mark that picture in some way so that you will know just which one we are talking about. I'll just mark that picture "A" and put my initials on it down in this corner.

(The photograph in question was marked "A", "N. B. H." by the witness.)

I can now give you the date I turned the album over to the James Manufacturing Company. October 23rd was the date that I turned this album over. Now, if you want the date that I first met Mr. Gillard I can establish it from that. That was October 23rd—October 23rd I believe was on a Monday. Have you got a calendar here so that I can look at it? That is all right, but I have got to fix it by the days of the week. I first met Mr. Gillard the second Friday before that. In other words, about ten or eleven days before that. Now, let's see, the 23rd was on Monday, the Friday before that would be the 20th. The 13th of October. That is right; it was Friday, the 13th. Now, I remember. That is the day I first talked to Mr. Gillard. Referring to this photograph which is marked "Figure 1", the fan as I understand it, is set in a low closet or cupboard on the floor; that is right. And I got at that fan through this little door which appears back of Mr. Hastings. That is correct. As to whether that was a solid door, I don't know—other than what the picture shows. Looking at the picture, it appears to be a solid door. Well, you can make

up your mind as well as I can make up mine. It appears [fol. 850] to be a solid door. I can't remember definitely with a detail of that kind. After these pictures were taken I visited this incubator—oh, probably four or five times. I was the contract agent or commercial manager, of the Muskogee Gas & Electric Company. My duties were to secure the signed order for connection for gas and electric service from commercial customers and to see to it—to give what might be called a general inspection of their premises and to estimate how much service they might need and use and if they did not have any wires connected ahead of the meter, and so forth. I never saw any other fan used in connection with this incubator than the one shown in Figure 2. As to what period I visited this incubator, well, to the best of my recollection, it must have been during the time that he was hatching there, after he was in operation. I can't just say how far apart or how close together my visits were. I was interested in the thing because of its novelty and when I went by that way I stopped in. I went there several times during that period; I would say about a half a dozen times altogether, during the entire time. I am told Mr. Hastings testified day before yesterday that he left there in May, some time in May. I would not have any way of knowing whether I went there then. I had no connection with this enterprise at all; none whatever, except my interest in it for its use of gas and electricity. No one would have had any object in kicking to me if the incubator had not worked properly. I might embellish that a little bit, that answer, if you would like me to. I will say this, that according to our [fol. 851] custom with any customer if anything would have happened to this enterprise so that it would have gone out of existence leaving any unpaid light or gas bill that I would have heard about it.

Redirect examination.

By Mr. Greer:

Q. Mr. Hickox, after these photographs that you have identified were taken did you ever visit that incubator with any view of checking any installation there or anything of that kind?

A. The visits I made to this incubator after the photographs were taken were perfunctory visits, the same as I made on hundreds of customers.

## Deposition of A. D. Peabody

A. D. Peabody, being called as a witness by the defendants, after being first duly sworn according to law, testified as follows by deposition which deposition was offered and admitted in evidence.

Direct examination.

By Mr. Rowan A. Greer:

My name is A. D. Peabody. I am 45 years old. I reside at 433 Foote Avenue, Webster Groves, Missouri. My present business occupation is Western district merchandising manager for Westinghouse. I have been with Westinghouse for a little over six years. I lived in Muskogee, Oklahoma, from March, 1910, until December, 1925. My business or occupation while I was living in Muskogee, [fol. 852] Oklahoma, was as electrical contractor and dealer from 1910 to 1921 and wholesale electrical jobber from 1921 to 1925. I know Mr. Norman B. Hickox of Chicago, who is now in the room where my deposition is being taken, both well and favorably. I met him in the Spring of 1910 at Muskogee, Oklahoma. He was living there at that time and he was commercial manager or contract agent for the Muskogee Gas & Electric Company. I know a Mr. Milo Hastings. I met Mr. Hastings in the Fall of 1911, late Summer or early Fall, in Muskogee, Oklahoma, at my place of business. I know what business or occupation Mr. Hastings was engaged in at that time. He was installing a commercial hatchery for and with Judge Lieber, as I understand it. I had something to do with the installation of the hatchery of Mr. Hastings in Muskogee, Oklahoma. We installed the ventilating equipment for him and did the electric wiring. I can tell you what means were provided in the hatchery there for ventilating purposes. The idea was, of course, to supply a mechanical means of putting warm, fresh air through these egg compartments at the proper temperature in this commercial hatchery. The first installation we made was a propeller type ventilating fan. My attention is called to a photograph appearing on page 34 of the album which has been introduced in evidence in this case as Defendants' Exhibit No. 26, this photograph being marked "Figure 2" with the initials "N. B. H." on it.

That is the ventilating fan that we installed in this commercial hatchery for Mr. Hastings. It was made by the Emerson Electric & Manufacturing Company of St. Louis. Installation was made, approximately, in the Winter, Fall [fol. 853] and Winter of 1911 and 1912. I can't designate the exact day or week or month, but within a period there of three or four months. Well, this fan is like many others that we bought from the Emerson Electric & Manufacturing Company through the Commercial Electric Supply Company in St. Louis, and the normal speed in such installation is 1150 R. P. M. I know that a change was made in the installation in connection with the ventilating or circulation of air in that incubator. Well, this propeller type fan was found not to exert sufficient pressure to force the air in sufficient quantity down through these egg racks and we changed this to what is called a sirocco blower. Well, as I said, this installation was made in the early Fall or Winter of 1911, and this change was made as I recall it—I could not fix the exact date, but within six to eight weeks after the original installation was started up. I personally had something to do with the installation of the ventilating means in that incubator. I had supervision of it. I had mechanics working for me that did the actual work but I had supervision of it. I saw the incubator itself in operation.

Q. I now hand you a set of drawings consisting of two pages, marked Defendants' Exhibits 22 and 22-A, in this case, and will ask you to look at those drawings and tell if those drawings correctly represent the installation of the incubator in the Hastings hatchery at Muskogee.

Mr. Ely: I object to the question. The proper way to examine this witness on that point was to get his recollection first before showing him the drawings.

[fol. 854] The Witness said: This represents the general scheme that was employed in supplying warm, fresh air for this incubator. However, this diagram showing the thermostat here is not the one that I saw. The one I saw was more or less of a home-made affair that Mr. Hastings had rigged up himself. This looks like a more finished product than the one he had, but the general circulation of air and the general scheme of warming this air and introducing it through these racks is as was used in that incubator. I am asked to look at page 82 of Defendants' Exhibit No. 26 and

tell what the photographs shown there represent. This is the installation that I saw there. This is the rather crude-looking switch and thermostat device marked "Figure 6, N. B. H.". I know that incubator was actually used and placed in operation. Yes, sir; it was. I did not hear any criticism either of Mr. Hastings personally or the operation of that incubator.

(Objected to as hearsay.)

The only comment that I ever heard about the installation was that it was satisfactory. I never heard any criticism as to Mr. Hastings or his character. I first learned that my testimony was desired in this case yesterday afternoon. I was requested to come to Chicago to give my testimony then—by long distance phone, by yourself.

(Referring to Mr. Greer of counsel for the defendants.)

I could not tell you anything at all of the revolutions per minute of the motor operating the blower which I have re-[fol. 855] ferred to, because I do not have the same information that I have on this propeller type fan because it was a bolted-up outfit that was used for this purpose and it would all depend on the size of pulleys used on the motor and on the blower. It might be anything from 600 to 1800 revolutions per minute. That blower was not furnished to Mr. Hastings by me or my company. It was a blower that we had furnished to Judge Lieber some time previous and adapted to this purpose. We installed it.

Cross-examination.

By Mr. Ely:

When this blower-fan was installed in the incubator it was put in the place of the other type of fan, the earlier type of fan. That is right. It was substituted therefor. I had no interest in the hatchery, no business interest; none whatsoever; just a customer of mine, so that if there were any kicks or any complaints they would not have come to me with them, not unless they pertained to the operation of the electrical equipment. But whether it hatched eggs or not, that would be something that would not come to me. That would be out of my province.

Redirect examination.

By Mr. Greer:

I was asked on cross-examination as to the substitution of the blower for the fan in this incubator. The location was approximately the same. As for the exact status in inches, that I could not give you but it was in that same general location that the blower fan was installed, in a [fol. 856] room there at the end of the egg racks. I do not know whether there was any change in the direction in which the fan was pointed or in the direction in which the blower was pointed. And that does not make any difference because a positive type blower will carry, has sufficient pressure to carry the air to where you want it.

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Deposition of JOHN G. LIEBER

JOHN G. LIEBER, a witness called on behalf of the defendants was first duly sworn, according to law, and testified by deposition at Muskogee, Oklahoma, Feb. 26, 1934, as follows, which deposition was offered and admitted in evidence:

Direct examination.

By Captain Greer:

My name is John G. Lieber; my age, sixty-one; residence, 1211 Locust Street, Muskogee: and occupation, Druggist. I have been living in Muskogee, Oklahoma, thirty-nine years.

I know a Mr. Milo Hastings. He came to me in 1911, I think along in the fall, and said the Commercial Club here had sent him to me. At that time I was practicing law and operating some other business affair here in Muskogee. At that time he told me about his idea about a hatchery, "Mammoth Hatchery", as he called it, and he needed someone to finance it. He went somewhat into detail about his idea of a Mammoth Hatchery; it looked pretty good to me; [fol. 857] I had a little money in those days and wasn't afraid to take a shot with something that looked all right, so I agreed to back him for $1,000.00 and furnish him a place for his hatchery; that is, for the hatching of the eggs, and

office place, for him to receive the customers, etc. That was in the fall of 1911.

We made an agreement and formed a Corporation known as the "Hastings Hatchery," the Corporation consisting of Milo Hastings—I think he was Vice President, and Eddie Hastain, who was Secretary and Treasurer, and myself. Hastings went right to work to building the hatchery, which was built on the back end of a lot that is next to the Ritz Theatre now. The number was 306 and 308 Court Street. The hatchery was actually built. I had the place already for him to work in; in fact, I had the buildings. It was a one-story brick building approximately twenty (20) feet square. That was the building in which the incubator was installed, and office building or workshop or whatever you might call it. That was a building twenty-five (25) by fifty (50) feet, twenty-five (25) by seventy-five (75). It was completed sometime that winter just before the hatching season ordinarily starts. I imagine about January.

I can give you a description of that incubator. The incubator was 30,000 egg capacity; there were seven (7) compartments and each held 5,000 eggs; those compartments had trays that fit in there, I think about 20 trays, and each tray held 500 eggs. I think that was the way of it. I said there were seven (7) compartments. Well, now, the sev- [fol. 858] enth compartment, I might state right here, was not necessarily for hatching but to take the chickens off when they had been hatched. They were arranged side and side, one just beside the other, all in one big enclosure of course, and there was a place in the bottom of each compartment where the air could go out, and place in the top of each compartment where the air could come in, and the intake or top of the compartment had a valve you would call it, just a slide so he could regulate the amount of air that went in there. He could enclose it off entirely if he wanted to, or open it wide open, so that he could regulate the amount of heat he had in each compartment.

For the heating of the air he had an arrangement of pipes, that is, just ordinary stove pipes, in the south end of the hatchery itself, and those stove pipes were connected with a gas heater, gas burner, to furnish the heat. That burner was equipped with a "thermostat" I guess you would call it, to regulate the heat.

Now, the arrangement for the circulation of the air. At first he had—to circulate the air, he used an ordinary ex-

haust fan that we had used in one of our picture shows. After about two or three days after he first started the hatchery, that is, the hatching of eggs, he found that the exhaust fan wouldn't furnish the force to the air that he needed, and we then ordered a blower from up north somewhere; I don't recall the name of the firm; ordered it by telegraph and had it sent by express, because Hastings realized that he had to change it right there or lose what eggs he had in the incubator.

(Objections to testimony as to what Hastings thought.)

[fol. 859] With regard to the fan which was initially installed in the incubator, the air space between the compartment that held the eggs and the east line of the incubator was about eight (8) inches I would say. This fan was twelve (12) inches or more in diameter, and he necessarily had to set the fan at an angle in order to make it fit in like it should.

I am handed a drawing, "Defendants' Exhibit No. 22," and asked to look at that drawing and tell what it is, or what it represents.

(Whereupon, witness examines "Defendants' Exhibit 22").

That is about as near a drawing of the incubator as it was set up as you could get without taking an actual photograph. Of course the—it may not run true as to size, etc., or inch or quarter-inch, or whatever you might call it, or as to scale, but that is approximately like it was set up after the blower was set up. That blower corresponds approximately with the arrangement of the incubator as near as I recall it.

My attention is called to a line drawn from approximately the center of the drawing with the letter "E" at the end of it. That represents a compartment of the incubator. That is the compartment which I referred to as containing twenty (20) trays. The little nobs that has the ink line with the letter "P" at the end of it, that represents, as I recollect it, a "latch" you would call it, to hold the door in place that held those—made the thing air-tight. Now, the space on the drawing that has the ink line with the letter "R" on it, that is the "valve" you would call it, or [fol. 860] "regulator" to regulate the amount of air that was let into a compartment. On the top of each compart-

ment there. With that slide arrangement so that that hole in the top could be closed or opened as you wished—just according to the amount of air that he wanted in each compartment.

That incubator did not occupy the entire space of the building. It occupied approximately one-half of one side, or one-half of the building, you might say. And I stated that the capacity of that incubator was approximately 30,000 eggs.

I am asked to look at an issue of the Popular Mechanics Magazine, "Defendants' Exhibit No. 24," and state what the picture appearing on page 630 of the Popular Mechanics represents. That represents Milo Hastings taking chickens out of a compartment of the incubator and placing them in shipping boxes. That is the incubator that I have referred to here in Muskogee.

As to the arrangement in connection with this incubator for furnishing moisture to the air that was circulated in the incubator: He had a—I guess you would call it, a deep pan and a narrow pan of water, right at the end of the blower so that the air that went into the blower would have to pass over the pan of water.

I am asked to look at an issue of July 6, 1912, of the Electrical World, page 55, "Defendants' Exhibit No. 25," and shows two illustrations marked "fig. 1" and "fig. 2," and state what those are, if I can. "Fig. 1" represents Mr. Hastings in that hatchery candling eggs, and Figure "2" represents the original exhaust fan that he put in the hatchery, with the moisture pan shown just under the ex- [fol. 861] haust fan. That is the fan that was initially put in the incubator. That fan was later substituted by a blower. That photograph, "fig. 2," correctly represents the installation of that fan as it was originally put in this incubator.

I am asked to look at a photograph, "Defendants' Exhibit 26-C." There are two views in this Exhibit and I am asked to look at this and tell what they are, if I can do so.

(Whereupon, witness examines "Defendants' Exhibit 26-C").

They are both numbered "26-C." The one on the right-hand side shows the exhaust fan that was in the blower as it was actually installed. Left-hand shows—the one on the

left-hand side shows Milo Hastings in that incubator in the act of turning the eggs in a tray.

I am asked to look at a photograph, "Defendants' Exhibit No. 26-D." That is this one (indicating), and to state, if I can, what that represents.

(Whereupon, witness examines "Defendants' Exhibit 26-D").

The top part of the photograph represents trays of eggs pulled partly out of the different compartments—of the Hastings Incubator here in Muskogee. And one tray on the side there—two trays, rather, on some brackets that he had on the side of the wall to put these trays on, or to put anything on he wanted to, for that matter. The lower portion of that picture, "Defendants' Exhibit 26-D," shows trays [fol. 862] of eggs inside of the compartment of that hatchery. I can state that that incubator was in actual operation during the hatching season of 1912 and 1913. Mr. Milo Hastings stayed here in Muskogee, until the latter part of the summer, I think it was, of 1912, and then left.

I know that while Mr. Hastings was here in Muskogee the incubator was operated at full capacity. The result of that operation of that incubator as far as I know was that it hatched thousands of eggs into chicks.

The—now, I could tell you about why he hatched with the eggs as he did that first year. Probably you don't want that in, though. However, that year he had intended to hatch eggs like they do today in the big incubators.

(Objected to as testifying to what Hastings intended to do.)

I was interested in this incubator as a financial venture myself. A few eggs were received to be hatched in this incubator upon a commercial basis, but most of them were what we call today "Custom Hatching". I mean by "custom hatching" where people will bring a setting of eggs, or case of eggs, to the hatchery, and have them hatched themselves. He devised a means of raising some money quick because he had used twice as much as I had agreed to furnish him, and instead of doing "Commercial Hatching" as they do today, he advised that he would do "Custom Hatching". A charge was made for that. I don't recall the amount, but I know it took a lot of bookkeeping. I do not

have any of the records of that bookkeeping or business [fol. 863] transactions now. I suppose they were destroyed when we tore the incubator up.

I am asked if I have any knowledge of what percentage of eggs hatched that were placed in that incubator. I recall, I was living out on a farm at that time, north of town, and we were hatching eggs with hens and had been for some years before. This incubator, they were hatching the usual percentage of hatches during that year. That was the year of 1912. My recollection is that it ran from nothing in some cases to as high as 75 and 80% in other cases.

The venture was not a financial success. In other words, I did not make money out of my investment in that incubator. No, I lost it all. After Mr. Hastings left Muskogee in the summer of 1912, we left it just as he had built it and Mr. Hastain who was a member of the Corporation, and knew more about the operation of the hatchery than anybody else outside of Milo Hastings, had his brother-in-law, a Mr. Dierfield, put some money in the business the next spring, and he and Mr. Dierfield operated it during the season of 1913. I say they operated it. I mean by that, they hatched eggs in it. Then, after the season of 1913, we tore it all apart and moved it out to my farm and Mr. Hastain's farm, which was just beside my farm. It was never operated again after the season of 1913 after moving it out to my farm. As to what has become of it, most of the lumber was used in other buildings and things, and the trays were out at Mr. Hastain's farm for quite a while. Now there is nothing left of it that I know of but the blower. That is the blower that was substituted for the [fol. 864] fan originally. That blower is still in existence. It is out on Mr. Hastain's farm. I have had photographs taken of that blower lately.

I am handed a photograph and asked to state what that photograph represents.

(Whereupon, witness examines "Defendants' Exhibit 22-B".)

(Objection by plaintiff as the blower is in existence and the photographs are secondary evidence.)

This photograph shows the Air Intake side of the Blower. That is, of the Blower that was installed in that incubator. I had that photograph made.

Captain Greer: The defendant now offers in evidence the photograph identified by the witness, as "Defendants' Exhibit 22-B".

Mr. Ely: I object to the receipt of the photograph as secondary evidence. The blower should be produced if in existence now. I also object to the photograph on the additional ground that it only shows a part of the device.

The witness resumed under direct examination by Mr. Greer:

I am handed another photograph and asked to state what that photograph represents.

Mr. Ely: I repeat my objection in regard to secondary evidence.

[fol. 865] (Whereupon, witness examines "Defendants' Exhibit 22-C".)

That represents the back end of the blower. I had that photograph taken.

Captain Greer: The defendant now offers the photograph identified by the witness in evidence as "Defendants' Exhibit 22-C".

Mr. Ely: I make the same objection, and move that all the testimony be stricken out with regard to these photographs.

Q. I now hand you another photograph, Mr. Lieber, and ask you to state what that photograph represents.

Mr. Ely: Same objection.

(Whereupon, witness examines "Defendants' Exhibit 22-D".)

A. That represents the side of the blower containing the pulley.

Q. Did you have that photograph made?

A. Yes, sir.

Captain Greer: The defendant now offers in evidence the photograph identified by the witness as "Defendants' Exhibit 22-D".

Mr. Ely: Same objection. May I ask counsel for the defendant if they are going to produce the original blower?

[fol. 866] Captain Greer: I will take you out and let you look at it.

Mr. Ely: No, sir, I protest against any secondary evidence. The blower should be produced.

Captain Greer: The present intention of the defendant is not to have the blower introduced itself in Court.

Mr. Ely: There must be some reason why you don't want to produce the blower in Court.

Captain Greer: The reason being that such is an unnecessary expense and burden.

Mr. Ely: I think I shall try to bring out the real reason on cross-examination.

Q. I now hand you another photograph, Mr. Lieber, and ask you to state what that photograph represents?

(Whereupon, witness examines "Defendants' Exhibit 22-E".)

A. That represents the blower, showing the exhaust part of the blower.

Q. Did you have that photograph made?

A. I did.

Captain Greer: The defendant now offers in evidence the photograph identified by the witness as "Defendants' Exhibit 22-E".

Mr. Ely: Same objection.

Mr. Ely: Why don't you bring the animal in?

Captain Greer: I can't carry it around conveniently.

[fol. 867] Mr. Ely: Oh, yes you can.

Captain Greer: I will tender it to you to bring in if you want to have it in physically.

Q. I now hand you another photograph, Mr. Liber, and ask you to state what that photograph represents.

Mr. Ely: Same objection.

(Whereupon, witness examines "Defendants' Exhibit 22-F".)

A. That shows approximately the same view of the blower as the last photograph except that it is taken farther away from the blower.

Q. Did you have that photograph made too?

A. I did.

Captain Greer: The defendant now offers in evidence the photograph identified by the witness as "Defendants' Exhibit 22-F".

Mr. Ely: Same objection.

Q. Mr. Lieber, have you retained the custody and possession of that blower ever since it was installed in the Hastings Incubator in 1912?

A. Yes, sir.

Q. Has anyone ever endeavored to purchase that blower from you?

A. Yes, sir.

Q. Who, and under what circumstances?

A. Some years ago when the Buckeye people of Springfield, Ohio, I believe it is, anyhow, the Buckeye people were suing a man by the name of Cooley in New Jersey, I believe it was. I think it was Mr. Taggart who then repre- [fol. 868] sented them, sent me a telegram offering to pay me $50.00, I believe it was, for the blower.

Q. Was that sale consummated or made?

A. No, sir.

Q. Why not?

A. In my answer to the telegram I made a condition of the purchase that it was not to be used—not to be destroyed—and was to be used for exhibition purposes only.

Mr. Ely: I object to the testimony of the witness as to what the telegram might have contained. He can produce the original.

Q. Have you got that oringinal telegram now that you received?

A. No, sir, I have not.

Q. Well, was that condition agreed to by Mr. Taggart, or by the Buckeye Incubator Company?

A. No, sir, I never heard from them any more about it.

Q. And you still have possession of this blower?

A. Yes, sir.

Q. Is that the only portion of this Hastings Incubator that is now in existence that you know of?

A. Yes, sir.

Q. Mr. Lieber, at the time of Mr. Hastings leaving Muskogee in 1912 what were your relations with him? I mean by that, were they friendly or unfriendly or what-not?

A. They were always friendly. He was a hardworking boy; did nothing to cause me to have any enmity towards him.

Q. Do you know whether or not this Hastings Incubator in 1912 was a new thing in this community at that time or not?

Mr. Ely: I object as entirely immaterial.

[fol. 869] A. It was supposed—regarded as a new thing in the world, not only as a new thing in Muskogee.

Q. Was any publicity given to it or not, and to its operation?

A. Mr. Hastings was quite a publicity man and he got much more publicity out of his building and operation of the hatchery than most people would get.

Q. Do you know whether or not many people visited it in operation?

A. Lots of them did.

Cross-examination.

By Mr. Ely:

Referring to this blower which I said was installed in the Hastings Incubator, the discharge opening of this blower with respect to the room in which it was stipulated,—it was placed in the same compartment where the exhaust fan had been, but was set in a little different way on account of the difference in the make of the blower and the exhaust fan. If you had some of your business I could show you just how it was set. Exhibit "22" shows approximately the location of the blower. I couldn't to an inch or anything like that but that shows approximately. The intake part of it is shown in this Exhibit (indicating "Defendants' Exhibit 22") and the exhaust part is also shown in there. As to the exhaust being set into this partition, it was connected with it but it could hardly set in it because there wasn't sufficient place on the blower itself. It had to be connected with the compartment in which the air circulated.

Q. Yes, but I mean the partition wall came down flush with the outlet of the fan shown in "Exhibit 22-F"? Is that [fol. 870] right?

A. Yes, that was as near airtight as he could get it, and it was connected with the other side of the compartment of course with a pipe.

Q. "The other side of the compartment"—just what do you mean by that?

A. I mean this space in here that is shown on "Exhibit 22" in the—I would call it the northwest corner. It shows a curved wall there.

Q. Well, that is what you mean by the pipe. What I am getting at, was the mouth of this blower set right in this vertical partition?

A. Which one? This one or this one? (Indicating "Defendants' Exhibit 22".)

Q. I mean this vertical partition. Give me this. Was it set right in the vertical partition as illustrated by Figure 3 of "Exhibit 22-A" or Figure 2 of the same Exhibit?

A. My recollection is that it was set as shown in Figure 2.

Captain Greer: Of "Exhibit 22-A".

Q. Now, Mr. Lieber, as a matter of fact, when you and Mr. Taggart were discussing the matter of the possible sale of this fan, you asked Mr. Taggart $5,000.00 for the fan, didn't you?

A. Yes, sir.

Q. And he laughed at you and thought it a ridiculous price? Isn't that so?

A. No, Mr. Taggart, I don't think made the proposition to me orally. It came by telegraph as I remember.

Q. They offered you $50.00 and you asked $5,000.00?

A. Yes, sir, and the further provision that it was to be used only for exhibition purposes.

Q. Well, the truth of the matter was, they offered you [fol. 871] $50.00 and you asked them $5,000.00?

A. Yes, sir.

Q. And that is the reason you didn't sell it?

A. No, sir.

Q. You deny that?

A. That is one of the reasons I didn't sell it.

Q. They didn't meet your $5,000.00 price, that is true, isn't it?

A. That is true, yes, sir.

Q. Now, when did you take these photographs that form Exhibit 22-B, C, D, E and F? When did you take those?

A. Last week.

Q. Who was present when you took those?

A. Mr. Warren.

Q. Was Mr. Greer present?

A. No, sir.

Q. Did Mr. Greer go out to see this blower at any time you know of?

A. I think he went out there yesterday to see it.

Q. Were any arrangements made at any time to bring this blower in here?

A. No, sir.

Q. Not at all?

A. No, sir.

Q. Were you present when Captain Greer was there at the farm yesterday?

A. No, sir.

Q. Were you ever present when Captain Greer was there?

A. No, sir.

Q. Who is this Mr. Warren?

A. He is a friend of mine here that knows how to operate a kodak.

Q. Did you ever measure this? Were you present when these photographs were taken?

A. No, sir.

Q. You were not present?

A. No, sir.

Q. How often have you seen this blower since 1913?

A. Oh, I have seen it on an average I guess of once a year. I see it every time I am out to Mr. Hastain's farm.

Q. Were you ever present when the outlet portion of this blower was measured?

A. I don't recall ever measuring it.

[fol. 872] Q. Were you ever present when anyone else ever measured it?

A. I don't recall.

Q. As a matter of fact, were you not present when it was measured when Mr. Taggart was there?

A. I don't remember it. I don't recall of Mr. Taggart and I ever being out there together.

Q. Don't you remember that the diameter of the outlet as shown in Exhibit "22-E" and "22-F"—Do you know what the diameter is?

A. I know approximately. Not to an inch.

Q. It is twelve (12) inches?

A. I though- it was eight (8) inches; it may be twelve (12).

Q. Now, you know very well it was twelve (12) inches across there?

A. No, sir, I don't. The number of the blower, or number on the blower would tell from the description of the machine from the factory.

Q. What is that number?

A. It is either 21 or 12, I don't know which.

Q. It is two and one-half (2½), isn't it?

A. Yes, I believe that is what it is, 2½, yes.

Q. As a matter of fact, don't you know a 2½-inch blower of this make is twelve (12) inches in diameter at the outlet opening?

A. No, sir, I don't know a thing about it, Mr. Ely.

Q. Did Captain Greer ever ask you what the diameter of that opening was in his discussion with you prior to your going on the stand?

A. I don't think he did.

Q. He never asked you that?

A. I don't think so.

Q. Did he ever ask you if it was an eight (8) inch opening?

A. I don't think so.

Q. That blower is now out on the farm, is it?

A. Yes, sir.

[fol. 873] Q. We can go look at it, I suppose?

A. I will give you an order any time on the man that has custody of it.

Q. Where did you get this blower from? Where did it come from?

A. Way up north somewhere.

Q. The American Blower Company, wasn't it?

A. It shows on the photograph, I believe. I don't recall.

Q. It is the American Blower Company of Buffalo—or Detroit? What is known as a "Sirroco" Blower?

A. I believe that is right.

Q. Number Two and one-half (2½)?

A. That is what it looks like, yes.

Q. And you don't know the diameter of that outlet opening?

A. I never did measure it that I know of.

Q. Now, just when was it that you purchased this blower?
A. It was early in 1912.
Q. You mean, it might have been any time during the first half of 1912?
A. No, it was I imagine in January of 1912 because it was bought within three days after he first started the incubator with eggs in it.
Q. Was it a new blower at the time?
A. Yes, sir, brand new.
Q. And how was it shipped to you?
A. By express.
Q. C. O. D.?
A. C. O. D., yes, sir.
Q. And you had to pay for it?
A. Yes, sir.

The witness resumed under cross-examination by Mr. Ely as follows:

Before this blower was purchased by me, Mr. Hastings had not completed any hatches in the machine. He had [fol. 874] gotten along with the hatches only two or three days according to my recollection. I don't think it was a full hatch that he had there; don't think it was a capacity hatch at that time. That is to say, that whatever hatches he had in this machine prior to the purchase of the blower would have been probably started during the month of January. He probably ruined some hatches but as he didn't do it while that exhaust fan was in there. My recollection is that he never pulled off a hatch while the exhaust fan was in there. By "exhaust fan", I am referring to this other type of fan such as is shown in this Exhibit No. 25. At no time during the period that the exhaust fan was in did Mr. Hastings have the incubator full of eggs.

I don't know when that picutre which is in Exhibit "25" was taken. I don't know when it was taken; it was taken sometime early in 1912. He took pictures of the whole thing before he ever started it. That is not something I heard. I was right there every day. Not all the time of course. I was in and around the place there; had my office right on the same lot.

Now, in this Exhibit "26-D", the incubator is apparently full of eggs. When that photograph was taken I do not know what kind of a fan he had. I couldn't tell you whether

he had the exhaust fan or the blower, because it doesn't show either fan in that Exhibit. I don't know then when that picture, "26-D", was taken, what kind of a fan he had in the incubator.

I don't recall being present when any of these photographs of the incubator that were shown were taken. And [fol. 875] my testimony is that as far as I know, the exhaust fan was never used through a complete hatch—was only used about three days at the start and then the blower fan was substituted.

I testified by way of deposition involving this Smith Patent back in 1925. I remember that. Here in Muskogee. Yes, sir. Mr. Linebaugh examined me. I think so.

Q. Do you remember testifying in that case as follows:

"A. The only difference that I remember of was that the first hatch was extremely low, and Milo Hastings attributed it to the ordinary exhaust fan, which was being used to circulate the air."

Q. Do you remember so testifying?

A. Yes, sir, I guess I did.

Q. Then your testimony this morning that Milo Hastings never went through a complete hatch. Now you swear that is what you said back in 1925.

A. When you are thinking of things that happened years ago, the more you think of them, the more you get onto the details.

Q. Isn't it a fact that the testimony which you gave eight and a half years ago was eight and a half years nearer the date the thing occurred than today?

A. Yes, but that was twelve years after the thing occurred, or fourteen.

Q. There is another thing I want to ask you about. I notice in this Affidavit and what you testified this morning, "that the incubator was operated at least on one occasion [fol. 876] at full capacity of 30,000 eggs". You testified that way this morning, didn't you? That is your testimony today?

A. Yes, sir, I think so, and it was.

Q. And you made Affidavit to that effect for the benefit of the defendant here?

A. Probably I did.

Q. Do you remember testifying at that former proceeding in 1925 as follows:

"A. The largest amount it ever had in it, if I remember correctly, was about 25,000."

Q. Do you remember so testifying?

A. I guess it is if it is on there.

Q. Did you so testify?

A. I guess I did before Mr. Linebaugh.

Q. And you testified at that time that the largest amount of eggs ever in the incubator was 25,000?

A. As I remembered it then, yes. That meant five (5) compartments full.

Q. Your testimony this morning, however, was 30,000 eggs; had the full capacity in; do you remember that?

A. Yes, sir, and I think the latter statement is correct.

Q. That is, you think your testimony today is correct, where the testimony given back in 1925 was wrong?

A. It might have been off some.

Q. It might have been off some? You have changed it for the benefit of this defendant, haven't you?

A. No, sir, I have got no interest in this thing one way or the other. I have done lost my money in it and don't expect to get it back.

[fol. 877] Q. And you testified again, a second time in that proceeding in 1925. Do you recall this testimony? The question was:

"Q. You have also stated that the greatest capacity ever in the machine at one time was 25,000 eggs, have you not?

"A. Yes, sir, that is my recollection."

Q. You so testified back in 1925, did you not?

A. That was my recollection at the time, yes, sir.

Q. Prior to your taking the stand you have had some conferences I presume with Captain Greer here? I know you have? A. Yes, sir. Yes, sir.

Q. And he also gave you a copy of the testimony that Milo Hastings gave in this same proceeding, and you read it over?

A. I did not read it over. He showed it to me, yes.

Q. Now, are you positive, Mr. Lieber, that this exhaust fan was set at an angle in that fan compartment?

A. I am as positive of that as I am of anything that happened twenty-two years ago.

Q. In fact, you are not very positive about it? That is the truth of the matter, isn't it?

A. I know that the fan couldn't set in that space without lapping over one side of the wall because the fan was twelve (12) inches or more in diameter, and the space where he shoved the air in was approximately eight (8) inches.

Q. Where did the moisture pan set with respect to this exhaust fan?

A. It was right under the exhaust fan.

Q. It was a square moisture pan?

A. Yes, sir, approximately square.

[fol. 878] Q. And set right underneath the exhaust fan?

A. Set right under the exhaust fan and I think right under the intake of the blower.

Q. We are talking now about the exhaust fan in this particular set of questions. I am not asking about the blower, I am asking you about the exhaust fan.

A. All right.

Q. Was the moisture pan changed when the blower was put in?

A. I don't recall as to that. I think he used the same pan.

Q. Used the same pan?

A. I think so.

Q. That moisture pan is shown in Figure 2 of Exhibit "25", isn't it? Directly beneath the fan?

A. Yes, sir.

Q. Who told you—when did you hear recently a discussion of the setting of that fan at an angle?

A. Well, I knew it was setting that way I guess when the thing was built for that matter, but my attention was called to it since Captain Greer came here.

Q. Yes, he showed you a sketch that Mr. Hastings made with a red pencil on Figure 2 of Exhibit "22-A"?

A. Well, this is the first time my attention has been called to the red sketch on there.

Q. But he told you, did he not, that Mr. Hastings testified that that fan was set at an angle in that fan compartment?

A. Yes, I think I saw that part of Mr. Hastings' testimony.

Q. That this fan was set at an angle?

A. Yes, sir.

Q. As a matter of fact, isn't that the basis of your present recollection that that fan was set at an angle?

A. Those things will naturally refresh your memory and you will think of things you never thought of before when [fol. 879] you see a photograph of it, and testimony. That is true of any testimony.

Q. Will you look at that photograph in Exhibit "25"? Is that approximately the angle of the fan?

A. That shows the way it was set in there all right.

Q. And the moisture pan was square?

A. I won't say it was square.

Q. Well, it was square?

A. No, sir, I won't say it was square any more than twenty-four (24) inches one way, and eighteen the other.

Q. That is the way your memory has been refreshed—your memory has been prodded on it?

A. Not "prodded", no, sir. Just my recollection has been called to those things.

The witness resumed under cross-examination by Mr. Ely as follows:

Milo Hastings kept the books, and he had charge of the running of the incubator. And I was busy on my other interests here in Muskogee. I was running four moving picture theatres and I had a lot of interest in real estate developments here. Muskogee was a boom town at that time, and I was busy in the real estate business in connection with the boom in Muskogee. I was trying to do my part. As a matter of fact, I left the matter of the operation of the incubator up to Milo Hastings and Eddie Hastain, the other member of the Corporation. Mr. Hastain is still alive—he lives at Phoenix, Arizona.

Whatever I know about, or what I know about the percentage of hatch, etc., is what I got from Hastings. I recall [fol. 880] that we had some eggs hatching ourselves in the incubator, and we got the ordinary hatch for that season. And I so testified and so made Affidavit that has been filed in this case, that I had some eggs set for me in this incubator. Yes, sir. I don't know whether I did before or not, but I did. That was especially true of the second year of the hatch. That is to say, I know I had some eggs in this

second year the thing was operated, but I am not very sure about the first. I am not so sure about the first because we had been in the habit of hatching eggs with hens out on the farm and if I had any chicks I probably got them from Hastings because he got some eggs and put them in there himself. As a matter of fact, I was running a farm at that time, living on it. I know that we put eggs in that incubator in 1913. I think we had some in in 1912. By "we", I mean, well, my wife probably attended to it. I probably brought the eggs in and left them with Hastings.

Q. Your recollection it not very clear on that?

A. Well, that is the way it would have happened.

Q. Didn't you testify while on the stand in 1925:

"A. I don't think I put any eggs in myself."

A. Perhaps I did.

Q. And you so testified, did you not?

A. If it is there, I did, yes, sir.

Q. I show you that part which is underlined.

(Whereupon, counsel exhibits transcript of testimony to witness, which is later marked for identification "Plaintiff's Exhibit 100".)

[fol. 881] A. Yes, I know I bought some chicks.

Q. You bought some chicks but I am asking you if you didn't testify back in 1925 that you didn't think that you put any eggs in yourself?

A. I am satisfied I testified it or it wouldn't be in there.

Q. Now, as a matter of fact, Milo Hastings left Muskogee in May, 1912, didn't he?

A. I don't think so.

Q. He left while the hatching season was going on, did he not?

A. I don't think so.

Q. Your recollection is that he left in the summer, as you have testified this morning, is that true?

A. Yes, sir, I think that is right.

Q. And that is your best recollection?

A. That is my best recollection that that is when he left.

Q. Your recollection this morning seems to be somewhat vague, does it not, Mr. Lieber, on that point?

A. No, sir, not any more so than it has ever been.

Q. Did Milo Hastings adopt the scheme of Custom Hatching after he had operated it with eggs of your own purchase?

A. No, sir, he adopted that before he ever started the incubator to going at all, is my recollection of it.

Q. That is your present recollection of it?

A. Yes, sir, he had intended to do Commercial Hatching but he found on figuring it out at the last that he could make some quick money by doing Custom Hatching, and that is the reason he changed his plan.

Q. Did you not testify in 1925, Mr. Lieber:

"A. He started to operating it early in 1912. He had [fol. 882] originally told me that $1000.00 would be all he would need. Which I agreed to furnish. Before he had the hatchery in operation, he found that this would not be sufficient and I agreed to furnish another $1000.00. With this he succeeded in starting the hatchery but he soon discovered that this would not be sufficient to carry the work through. So he hit upon the plan of doing custom hatching."

Q. Do you remember so testifying in 1925?

A. Yes, sir, I did.

Q. Therefore, you testified in 1925 that Milo Hastings started out hatching your own eggs and then afterwards he took on the plan of Custom Hatching?

A. No, sir, I don't understand it to read that way, that he "started hatching". It shows on its face what it means.

Q. That is the way you testified back in 1925?

A. Yes, sir, that is the way I testified.

Q. Now, you said Mr. Hastings was an extraordinarily splendid publicity man?

A. I so regarded him.

Q. He was rather persuasive, wasn't he?

A. Well, I don't know about that.

Q. Well, he persuaded you, at any rate, to sink some money into this proposition?

A. Didn't take much persuasion to get me into it.

Q. And did he not father these various articles that appeared in the various papers, as far as you know?

A. I imagine he did.

Q. Didn't Milo Hastings become disgusted with the mess he had gotten the business in, and didn't he finally leave and

turn it over to you and tell you to do the best you could with it?

[fol. 883] A. I think that is about the way of it. I imagine it was the financial mess that he had got the thing in.

Q. But he got disgusted and left and left the thing on your hands?

A. Yes, sir, that is right.

Q. And then you tried to operate it in 1913 through Mr. Hastain and Mr. Dierfield, is that right?

A. Mr. Dierfield was—wait—Mr. Dierfield was Mr. Hastain's brother-in-law and on the strength of what Mr. Hastain had seen the hatchery do during 1912, Mr. Dierfield put $500.00 into the business and he and Mr. Hastain operated it in 1913.

Q. Did you intend to give the impression by your testimony this morning that the operation in 1913 was a success?

A. It hatched all right.

Q. Did you intend to give the impression that the operation in 1913 was successful?

A. So far as the operation of hatching chicks was concerned it was, but financially it was not.

Q. Just a minute—The operations in 1913 were a flat failure, were they not?

A. Absolutely not; hundreds of chickens were taken out to Mr. Hastain's farm in 1913 from that hatchery.

Q. Do you remember testifying in 1925 the following:

"Q. How long did Hastain continue to operate in the spring of 1913?"

and your answer was:

"A. My recollection is that they only put in one batch of eggs and closed down the hatchery when the hatch was unsatisfactory."

[fol. 884] A. I probably did. I said that was my best recollection and it was.

Q. But you changed your recollection for the benefit of this defendant today?

A. No, sir.

Q. Did you not also testify in 1925 in answer to the question:

"Q. After Milo Hastings left, did you or Ed Hastain undertake to operate the hatchery?"

and your testimony in reply to that question was:

"A. Mr. Hastain and a brother-in-law of his named Dierfield, operated the hatchery during a part of 1913. But neither of them knew anything about the principle of the hatchery and they had no success."

Do you remember so testifying in 1925?

A. I suppose I said that.

Q. All you ever got out of this Hastings Incubator was five hundred (500) pullets, isn't that true?

A. That is probably so at the windup, but they were hatched in that.

Q. You invested $25,000.00 in that hatchery——

A. $25,000.00?

Q. Did I say $25,000.00?—$2500.00, and you only got five hundred (500) pullets?

A. That is about right.

Q. $5.00 a pullet?

A. I guess so.

Q. Now, Milo Hastings, during the time he was operating this incubator in Muskogee, was hatching eggs for other people? That is, doing Custom Hatching?

A. Yes, sir.

[fol. 885] The witness then resumed under cross-examination by Mr. Ely:

At the same time he was carrying on hatching of eggs that were purchased by him or the Company, he bought some eggs. I didn't know what portion of the business was Custom Hatching and what was his own hatching. I never kept the books. No one ever absconded with any profits. Not that I know of; don't think there were any profits financially. I never made a penny out of it, and Milo Hastings never made a penny out of it, and Hastain never made a penny out of it. We all lost money and lost time.

Q. Do you remember in answer to the question in 1925 when you were testifying, the question was:

"Q. Was your venture in this matter successful or otherwise?"

and you said:

"A. I would say it was otherwise."

Do you remember so testifying?

A. I guess I said that.

Q. Do you remember testifying in 1925:

"A. We could not figure out its failure to hatch in 1913, except on the theory that Milo Hastings, the inventor, was the only man who knew how to operate it."

A. I probably did.

Q. But Mr. Hastain was about the incubator quite a bit during 1912, wasn't he?

[fol. 886] A. Yes, sir, he knew more about it than anyone outside of Milo Hastings.

Q. But he ran it in 1913?

A. Yes, sir, he made it hatch but didn't make any financial success.

Q. You might have hatched a few chickens, but, as a matter of fact, the operation in 1913 was a failure and you tore the thing down?

A. I couldn't tell you that. I know I didn't make anything out of it but it did hatch some chickens.

Q. A few?

A. Yes, sir, my recollection is quite a few because Mr. Hastain had a place fixed out at his farm and he took chickens out there.

Q. As a matter of fact, the only hatch made in 1913 was one batch of eggs, and that was a failure?

A. I didn't say we only made one hatch and that was a failure. I didn't say it was a failure as far as hatching was concerned.

Q. But, as a matter of fact, after that one hatch in 1913, the incubator was torn down?

A. After the 1913 effort, whether more than one hatch or not, I couldn't say positively, but the incubator was torn down and moved out to Mr. Hastain's farm and my farm.

Q. The incubator was not moved out?

A. I mean, it was torn up.

Q. And they used the lumber for repairing fences and buildings around the farm?

A. That is correct.

Q. And the only thing left of the incubator today is this blower, you testified?

A. Yes, sir.

Q. Which has a twelve (12) inch outer opening?

A. I couldn't tell you about that because I never measured it.

[fol. 887] Q. You will find out.

A. Don't believe it is that large, though. It has a twelve (12) inch intake, I know.

Q. I am talking about the outlet?

A. I know, you are talking about the exhaust, but don't believe it is twelve (12) inches. It may be though.

Q. Now, Mr. Lieber, as a matter of fact, these drawings, "22" and "22-A", are what you might call "diagramatic". They don't show the actual construction of the incubator as it was in Muskogee?

A. Well, you couldn't say it was an architect's drawing, no, sir, but it is as near as you could get at it without a photograph or architect's drawing.

Q. As a matter of fact, it isn't a drawing of the thing as it was actually installed here in Muskogee? You know that isn't true?

A. Not as to every detail it is not, but approximately it is.

Q. You are hitting on details. That is a question of what might be details and might not be details. The incubator here in Muskogee differed in many respects from what is shown in the drawing "22-A"?

A. I don't think it differed in any material respect at all.

Q. As a matter of fact, wasn't there a flume or a duct on top of those chambers which is not shown in that drawing?

A. I don't think so. This space here in Exhibit "22-A"——

Q. Now, wait a minute. "This space", what do you mean?

A. Shown in Figure 4 just above the sections. That of course covered the intakes to each separate section. My recollection is that there was no flume there but it was that entire space from the front end of the section to the back end of the section was open there so that he could [fol. 888] open his valve and let the air into either section that he wanted to or as much as he wanted to.

Q. And was it open clear to the roof of the room or the housing?

A. No; no; this incubator was set right in the room, built right in the room. The room was no part of the incubator. That is, the building was no part of the incubator.

Q. As a matter of fact, Mr. Lieber, was there not a narrow flume extending over the top of the incubator approximately the width of this opening, or those openings?

A. I don't remember it that way.

Q. Don't you remember testifying in 1925 that there was such a flume and that you remembered it because you tore it out?

A. Maybe I did.

Q. Do you recall so testifying?

A. No, sir, I don't.

Q. But you testify today that there was no such flume in there, is that right?

A. I don't remember it if there was, because there was no necessity for it that I could see.

Q. Now, that is reasoning? You are doing that by some process of reasoning and not recollection as to what the actual construction was, is that right?

A. Yes. I might add here that he kept the anteroom, the space from the incubator, from the front of the incubator to the wall of the house, he kept that practically the same temperature that he did his incubator.

Q. Now, Mr. Lieber, you said this morning that there were seven (7) compartments in that incubator. Is your recollection clear on that?

A. Yes, sir (counting on "Defts' Ex. 22"), one, two, three, four, five, six, seven.

[fol. 889] Q. Well, I know. When you answered "seven" you just counted off seven on that Exhibit "22", didn't you, right now? A. My attention has been called to it before. I have seen this drawing before I came up here, or a copy of it, but I remember it was a 30,000 egg incubator, six (6) compartments at five thousand (5,000) each, and one (1) compartment that he used to take the chicks off in, because he had to have different temperatures in each department.

Q. Each "compartment", you mean?

A. Each compartment.

Q. As a matter of fact, you testified back in 1925 there were only six (6) compartments?

A. I probably did. That is where I got the idea that 25,000 capacity is all that it ever had at one time.

The witness resumed under cross-examination by Mr. Ely:

The purpose of those shutters or those slides at the top of each compartment was to let the amount of heat that he wanted into each compartment, to keep it the proper temperature. That is to say, that kept each compartment at a different temperature, according to his idea about hatching. When the eggs were in one stage of hatching they were set in one compartment, and then moved to another, and then moved to another. It was arranged so that he could do that in the case of a continual hatch. He could just move eggs from one compartment to another and leave the temperature what it should be from the date the eggs were first put in the incubator, but he could hatch them [fol. 890] in one compartment if he wanted to. He kept the temperature of the compartments at a different temperature according to the age of the eggs, according to what the standard was, or what the temperature of the eggs should be at a certain period of their hatching. And then he moved the eggs over to the last compartment at the time the chickens were hatched. I don't say he did that in every case, but it was so equipped so he could do that. That is to say, when the incubator was operating, say, when he had a few eggs, he might set all the eggs in one compartment. He would have to keep the temperature at different stages according to the age of the egg. His idea was, according to my recollection, that he would have a continuous hatching all the time. That is, he could start eggs in one compartment, carry on for a few days, and then move them to another compartment and leave for a few days. And then move on for another period until they finally got down to the end. Yes, that is, if he was crowded for space, as new eggs came in he would put the eggs in the first one, and keep on moving them, and he would be putting eggs in the first compartment and taking chicks out of the last one at the same time. And in the intermediate compartments would be eggs further advanced in the incubation. And he adjusted those slides so more or less hot air would

go into each compartment, to control the temperature. The temperature of the different compartments was different. My recollection is that the temperature varied about ten degrees from the starting to the end. I don't know whether at the end, or the middle, or the first, but I know there [fol. 891] is a difference in the temperature of hatching chickens at the different stages of hatching.

I testified in 1925 as follows:

"A. He had valves or cut-offs connected with each of these sections, or compartments, by which he could regulate the heat of the air in each section or compartment. He could have one temperature in one compartment and a different temperature in another. He explained to me at the time that this was necessary because when eggs when first placed in an incubator they required the maximum amount of heat, whereas a few days before they hatched the chicks in the eggs furnished considerable heat, and therefore it was not necessary to supply as much artificial heat just before the chicks hatched."

I then went on to say:

"A. He gave this as his reason for having to have the device so that it would have one temperature in one compartment and a different temperature in another compartment."

I think that is right. And that is my recollection today.

As to what the construction was underneath those compartments—there was an outlet underneath according to my recollection now. My recollection is that it was very much the same as above the compartments. The space was the same and led in to where the fan was, or the blower. [fol. 892] I am clear on it for the reason I know it couldn't work any other way. I am connecting that up with the fact that I did tear it down and that is how I remember it; had to be some place for the air to get out and circulate. I do not know whether the outlet was the same size as the intake. I remember testifying in 1925 when I was asked somewhat similar questions:

"A. I am not positive though about the lower air conduit. I know the upper conduit was there, because I tore it out myself. I don't remember, however, about the lower one."

I think I said those very words.

This upper conduit to which I was referring in 1925 was the space above the compartments.

Q. As a matter of fact, wasn't there a narrow flume that went over the top of the incubator, a thing which is not shown in that picture (Indicating "Defts' Exhibit 22-A")?

A. There may have been, Mr. Ely, but I don't remember positively one way or the other; couldn't say whether it was there or wasn't there.

Q. And didn't that flume have a door or gate so that there was communication from the upper air conduit into the fan chamber?

A. I couldn't testify as to that because I don't remember.

Q. How did you get fresh air in and foul air out of that incubator?

A. I couldn't tell you about that. There was a door connecting the compartment that the fan was in with a little anteroom perhaps six (6) feet square.

Q. And there was a door back in the heater room.

A. Back on the south here.

[fol. 893] Q. Which was the south end?

A. This end (Indicating on "Defts' Ex. 22-A").

Q. At the south end where the heater pipes were?

A. Yes, sir, a little door so he could get into where the gas burner was, a narrow door, just barely big enough to get in.

Q. And weren't those doors the only way by which the fresh air could get into the machine?

A. I couldn't say about that. Was that door you mentioned and then one over here where the blower was.

Q. Do you remember testifying in 1925 as follows: The question was:

"Q. Was there any arrangement for getting rid of foul air?"

and your answer was:

"A. There was an opening or a door from the work room into the fan chamber. That I think was the only place where fresh air could be taken in. And, of course, when you took the fresh air in the foul air would get out.

"Q. The intake of fresh air, and the exhaust of foul air was accomplished by means of this door, or opening, was it not?

and your answer to that was:

"A. Yes, sir, except that there was also a door into the —connecting the work room end with the heating chamber which could also be used for letting in fresh air or expelling foul air.

[fol. 894] "Q. Were these doors kept open at all times?

"A. No, sir, they were kept closed most of the time.

"Q. What determined when they should be opened?

"A. The mind of the operator, I guess, or the temperature of the different compartments.

"Q. Was it in any way regulated automatically?

"A. Not that I remember of."

Q. Do you remember so testifying?

A. Yes, sir.

The Witness resumed: What is known now as the Ritz Theatre in Muskogee where your incubator was, was it known as the Hinton Theatre then.

I wasn't running the Hinton. I was running one right adjoining called the Wigwam.

But when reference was made to the Hinton Theatre, that is where the Ritz Theatre is now. But the Ritz Theatre has been enlarged now, and where the Ritz Theatre is now only covered the space where the office was.

I want to explain that the place where the Hinton covered was the space used for the office of the hatchery.

While Mr. Hastings operated this hatchery in Muskogee he got a lot of eggs mixed up. People got back a lot of chicks from eggs they never sent. He got it in an awful mess in that respect. And people might send Plymouth Rock eggs and get back Rhode Island chicks from the hatchery. Yes, Milo Hastings wasn't a bookkeeper. But they would get back chicks from somebody else's eggs. That is what got him discouraged like it did.

[fol. 895] I do not recall how many customers there were of this incubator, I don't know, the books would have shown, but I know there were lots of them. I think I told Captain Greer about some of them, Mr. Cory and Mr. Pitts. Was a fellow here used to call him "Chicken Anderson", I think he had some eggs in there; had lots of eggs. I don't think I rememebrd Anderson to Captain Greer because Anderson is dead. But I did give to Captain Greer, or to some of the defendants in this case, I gave the names of all the

customers I could think of. He asked me some, and anybody who ever asked me, I did. By "he", I mean Captain Greer.

Subsequent to 1913 I continued to operate my farm until 1921. I raised poultry on that farm, been daffy about chickens all my life, I reckon.

Q. You used an incubator?

A. No, sir, just bought chicks; never used an incubator; one was enough for me.

Q. Your experience with the Hastings Incubator was enough for you?

A. Yes, sir, one was enough for me.

I have raised quite a lot of poultry on that farm since 1913. Started a chicken farm east of town after I left my own farm.

When the blower fan was substituted for the exhaust fan he had to have a slightly different connection for the outlet, and I will add this: The exhaust fan had an electric motor, directly connected with it, and the blower fan required a belt and separate motor.

I remember testifying in 1925 "the only change"—I will read the question first:

"Q. From the first construction there were some changes [fol. 896] made in the construction or method of operation before Milo Hastings abandoned the enterprise, was there?

"A. The only change that I have any knowledge of was substituting the blower for the exhaust fan in order to get more positive circulation of the air."

That is my recollection.

I have been interviewed a number of times in regard to this Hastings Incubator. As to a number of defendants coming to me in regard to this Hastings Incubator, about the only two I know of was when Mr. Taggart was in it before, and this time with Captain Greer. Those are the only two I know of having any difficulty about it. I was not interviewed at the time the Cooley case was on by a man named Hicks. Never did interview me; wrote me some letters. I have seen Reese Hicks off and on—, I have seen Reese Hicks four times in the last twenty-two years. Well, Mr. Cooley might have sent Mr. Hicks down here. I don't know about that. I have talked to Reese Hicks, I know that, and he might have said Mr. Cooley sent him. Mr.

Reese Hicks might have interviewed me for Mr. Cooley and asked me about going to New Jersey to appear as a witness for him, or for Mr. Cooley. He may have done it. I don't remember that very clearly. I remember getting letters from Mr. Cooley and asking me if I would come. I do not now remember the interview I had with Mr. Hicks. I may have remembered it at that particular time, but I certainly don't now. I remember meeting Mr. Hicks several times.

Q. At the time that Cooley case was on don't you recall that as one of the inducements for your testifying with [fol. 897] regard to this Hastings Incubator in the Cooley case, was that you were promised the money which you had lost, promised to be reimbursed for the money which you had lost on the Hastings Incubator?

A. I don't remember that.

Q. Don't remember that at all?

A. No, sir, don't remember that. He promised to pay my way to New Jersey and back if I would come there as a witness.

Q. Didn't you give this testimony in answer to a question asked you in 1925:

"A. He said that before the thing was over with I would probably get my money back.

"Q. Referring to the money you had put into the Muskogee Hatchery?"

And your answer was:

"A. Yes, sir."

A. I remember so testifying and he probably wrote me that in that letter; that I would "probably" get it back, but I never figured I would.

Q. Yes, but you testified in that case that either Mr. Hicks or Mr. Cooley said to you that before the thing was over that you would probably get your money back, referring to the money which you had put into the Muskogee Hatchery?

A. They may have said that, yes, sir.

Q. And you so testified in 1925?

A. If it is in there I sure did.

The witness resumed under cross-examination by Mr. Ely:

[fol. 898] In this corporate set-up of the Hastings Hatchery I think I owned 50% and Eddie Hastain one (1) share and Milo Hastings the balance. Milo Hastings had 49%. I think that is it. The consideration for the 49% which Milo Hastings got was not the agreement that Milo Hastings would turn the patent over after he got it on the application he had pending on this scheme of his. That was the agreement after Milo gave the thing up and left work. That is my understanding of it. It is a fact that when the Corporation was formed, at the very start of the thing, Milo Hastings agreed to turn his Patent Application or any Patent he might get over to the Hastings Hatchery, Incorporated. I think Milo agreed to that, yes. Yes, I think he agreed to it, and I think it was afterwards consummated when he decided to leave here. And the agreement, one of the considerations for the 49% was the agreement of Milo Hastings to turn his Patent Application over to the Company, I think that is so. I wouldn't say positive because it has been so long ago. As a matter of fact, these things happened twenty-three years ago since we went into it, about twenty-three. And I haven't anything which is contemporaneous, haven't anything now which is contemporaneous with the things which went on in 1912, nothing at all. No scrap of paper or documents or anything of that kind. I am just relying upon my recollection of the thing, that is all, as it may be refreshed by reading over some testimony or looking at some drawings.

Mr. Ely: I introduce in evidence as "Plaintiff's Exhibit No. 100" a certified copy of the depositions of a number of [fol. 899] witnesses, giving their testimony in what is known as the Stone case, containing the depositions of L. A. Cory, S. J. Anderson, R. Shanafelt, John G. Lieber, Huston A. Hogan, and L. W. Pitts.

Captain Greer: This testimony is objected to on behalf of the defendants as being secondary evidence, and incompetent, and irrelevant, and having no place in the trial of any of the issues involved in this case.

The witness then resumed under cross examination by Mr. Ely:

This farm where this blower is now is about three miles north of town.

Redirect examination.

By Captain Greer:

In connection with Mr. Dierfield's putting this $500.00 into the Corporation that I was asked about, that occurred—it was after Mr. Hastings had quit the hatchery and before the next hatching season. And he was a brother-in-law of Mr. Hastain. He is the one that operated it in 1913, he and Mr. Hastain together.

Q. Now your attention was directed to your testimony given in a deposition in 1925 in which you were asked as to whether or not you regarded your venture in the 1912 Hastings Hatchery as successful or otherwise and asked if you did not state that you would regard it as otherwise. Please tell us what you were referring to in the use of that word "otherwise," as to the operation of the incubator or as to the financial end of it?

[fol. 900] Mr. Ely: I object to that question. The testimony as given in his previous examination stands, and I object to having a qualification or explanation for the benefit of these defendants.

A. By "otherwise" I meant from a financial standpoint, as far as I was concerned.

I have no hopes or expectations of getting back the money which I invested in this Corporation in 1912.

This concluded the testimony of the witness Lieber.

(It was stipulated by the parties that the signature of the witness to this Deposition, when written out, is waived.)

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L. W. Pitts, was called as a witness for and on behalf of defendants, and after being first duly sworn according to law, testified by deposition as follows, said deposition being offered and received in evidence:

Direct examination.

By Captain Greer:

My name, age and residence are: L. W. Pitts; fifty-three, age; 320 South 15th, Muskogee. At present I am a retired

Government Clerk. I have lived in Muskogee since January 1st, 1906. I was living in Muskogee, Oklahoma, during the years 1911, 1912 and 1913. At that time I was connected with the Indian Agency.

[fol. 901] I have engaged in the poultry business on a small scale. I have always experimented with small incubators and did considerable hatching and sold baby chicks. I guess I was about the first one in Muskogee who ever sold baby chicks. I have operated an incubator. Ran a couple of Cyphers. That was about 1910 or '11 I got them. There was such a thing as a Poultry Association in Muskogee, Oklahoma, around about that time. I don't recall exactly what dates. I was a member of it.

I recall an incubator having been installed, built or operated in Muskogee, Oklahoma, by a man named Milo Hastings. After Mr. Hastings came here and started that incubator I met him. Well, I think he came here around December. I heard the boys talking about it, and I think he started up in January, 1912. I mean he started the operation of an incubator here in Muskogee about 1912, about January is my recollection. As to where that incubator was located, well, I don't know the number of the street but I think where the Ritz Theatre is located now. I think about that filling station on Court Street. The Ritz Theatre is what was formerly known as the Hinton Theatre.

I had occasion to visit that incubator that Mr. Hastings was operating. On several occasions. I remember one time we all had a Poultry Show here and we all went over one night and he wanted to show us around, and the reason I remember so well it was zero weather. That was 1912. The incubator was being operated at that time. It had eggs in it. I never had any eggs myself placed in that incubator for hatching. I was running two Cyphers myself and [fol. 902] doing custom hatching besides. I never placed any eggs myself in Mr. Hastings' incubator for hatching. He ran it until May or June, I think, and then I think he left here. It has been a long time ago to remember things. That incubator was operated throughout 1912. Then he had a little poultry farm out here, and then I lost track of him. I think he left here. The next season I think Mr. Lieber operated it but I never visited it that year. I was in it two or three times after that cold night. It hadn't been running long enough at that time to know what it would do

when we visited it—the Association visited it. I just remember going into a brick room and it was awful hot in there, and it had trays all around in there. That is all I remember in there; going from zero to 103, I can remember very well. Eggs were in these trays. I saw Mr. Hastings there at that time. He was demonstrating the machine to this Poultry Association. I didn't know then anything at all of the percentage of hatching of eggs that were placed in there. I was there later though and saw chickens hatching and eggs pipping and half out.

Cross-examination.

By Mr. Ely:

Muskogee was just trying to get the poultry industry going then. We were one of the first cities to have a Poultry Association around here, I know. I don't remember how long this Poultry Association had been running, seemed to me like three or four years. I remember Mr. Shanafelt, a member of that Association.

Either January or February was the date of that Show [fol. 903] that right afterwards we went down to Hastings' place. I know it was awful cold, about January 21st, yes, sir, along in there. I say the incubator was being operated at the time we folks went down there from the Show. I am pretty sure it was. I do not know how many eggs it had in it.

Q. Didn't Mr. Hastings simply show you one tray of eggs he had in there?

A. Well, I couldn't say how many trays of eggs he had in there, but I know there was more than one. I remember that Mr. Hastings perhaps pulled out one tray of eggs and showed it to us. There might have been more, but I don't have any recollection of there being more, not at that time.

I do not remember testifying here in Muskogee in the year 1925, in September, giving testimony by way of deposition with regard to this Hastings Incubator. My first name is Lewis. Lewis W. In 1925, I lived at this same place; 320 South 15th Street. I was at that time forty-four years old, just about. It surely slipped my mind if I ever testified. I know Mr. Linebaugh. I remember when it was here and I believe I do remember being up to his office now, but I sure

had forgotten it. I have seen Mr. Taggart before but I sure forgot where it was. I remember seeing him sitting down some place. I remember now testifying there.

Q. Do you remember whether or not the following questions were asked you and you gave the following answers in response thereto:

"Q. Do you remember whether the operation of the hatch-
[fol. 904] ery was successful or otherwise?
"A. I don't think it was, he didn't have a very good hatch, and the chickens that were hatched were rather weak."

A. I might have but don't remember it.

Q. Do you remember testifying:

"Q. The percentage of chicks to the eggs was very low, was it?
"A. Yes, sir."

Q. Do you remember testifying to that?

A. I might have but I sure don't remember it; I'll be dogoned if I do.

Q. (Counsel reading from Transcript of Depositions taken in 1925 regarding testimony of witness, L. W. Pitts):

"Q. And what chicks were hatched were not strong, healthy chicks, but were weak, unhealthy chicks?
"A. Yes, sir."

A. I might have but sure don't remember.

Q. Just look at this.

(Whereupon, counsel submits deposition of witness given in 1925 to witness for examination, same being a part of "Plaintiff's Exhibit 100".)

A. Who took this? Mr. Linebaugh?

Q. It is given in answer to questions by Mr. Linebaugh in September, 1925.

Mr. Ely: I show the witness Exhibit "100".

[fol. 905] A. Yes, I remember Fulsom.

Q. You don't deny that that is a correct reproduction of your testimony given at that time, do you? Just read it all. Read it to yourself.

(Whereupon, witness reads transcript of his testimony given by way of deposition in 1925, which is a part of "Plaintiff's Exhibit 100".)

A. I sure have forgotten about this. I remember when he was here all right. (After reading deposition.) That is about right. That is about the way I would have testified, so I guess——

Q. That is all.

A. That is all I know now. I know they hatched some chickens but what percent I don't know, but they did hatch chickens.

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Deposition of C. T. Brewer

C. T. Brewer, was called as a witness on behalf of the defendants, and after being first duly sworn according to law, testified by deposition as follows, said deposition being offered and received in evidence:

Direct examination.

By Mr. Greer:

My name is C. T. Brewer; age, 65 and 11 months, and I live at 412 Callahan Street in the City of Muskogee. I have lived in Muskogee, Oklahoma, thirty-two years. I am not now employed; I am a retired Postal Clerk. I was form-[fol. 906] erly employed in the United States Post Office in Muskogee as General Delivery Clerk.

I have been interested in the business of raising chickens and hatching eggs in the poultry business generally for a good many years. We sold eggs for hatching and—I am sure I couldn't give you the dates, but for a good many years until recently, until—I will say, until twelve or thirteen years ago.

I know Milo Hastings. Well, Mr. Hastings built an incubator here and I don't know just how long that has been, quite a good time back, and I met him here, of course, and I had him hatch eggs.

Q. Do you remember what year that was? You say he built an incubator here. Do you remember what year that was?

A. Well, now, it has been quite awhile ago. I am sure I couldn't right offhand tell what year that was, probably 1910, '11 or '12, or somewhere like that.

I know where that incubator was situated. A little east and north of this place, I believe. I do not know the name

of the street it was on. I don't think it was on a street. It was between this next street here—what is that? Court? Well, between that and the next street back, I believe it was. I visited that hatchery a good many times. It was operated as a Commercial Hatchery. I don't know just how long it continued in operation—not so very long. I don't know whether it continued more than one season or not, I am sure.

I have somewhat of a vague recollection of the incubator used in that hatchery. I think Mr. Hastings built this along as he went, and I believe it was kind of in an "L" [fol. 907] shape as well as I recall, commencing this way (indicating from west to east), and running east, and running back south again, and he had his different departments cut off—departments or apartments or whatever you call it, of the incubator proper, where the eggs were put to hatch. Well, I am sure I don't know what its egg capacity was. Before he got through with it, it had quite a little capacity. I am sure I don't remember. It was large. I had never seen one as large as that before.

As well as I recollect, it operated by a Hot Air Blast. Well, I am sure—all—I could just describe my impression of it. At the west end of this first part of the "L" was a door, entrance there into kind of a hall or hatching chamber around there, and I remember the blast or machinery running there made it very difficult to talk or hear. On account of the noise. The air was heated. I believe it was done with gas; my impression of it. I saw it a good many times; we hatched off quite a lot—had him hatch for us quite a lot of eggs there.

I suppose we had as many as two (200) or three hundred (300) eggs hatched. By "we," of course, I mean my wife and I. I mean we would take eggs down there to be hatched, and I might add—I don't know if you want to know about it—we sold the Company eggs to be hatched, too, and we delivered them these once or twice a week. That is, in addition to the eggs we had hatched ourselves. We had in the neighborhood of 200 or 300 hatched ourselves. And then we sold in addition, eggs to the Company to hatch. The total of eggs which we turned over to this incubator to [fol. 908] be hatched, including the ones which we hatched ourselves and the ones we sold to them for hatching, well, I would think probably a thousand (1,000) or more; somewhere in that neighborhood.

As to the result of the eggs which we turned over to be hatched ourselves, well, we considered it fair results, good results, satisfactory. Well, I believe that they claimed that they would give a 70 or 75% hatch, and we had been hatching with hens, and, of course, we only had a small plant of our own, and we received along about that percentage of hatches. Somewhere about that—from 70 to 75% of the eggs which we turned over to them would be hatched chicks. I think we continued to patronize this incubator throughout the season of 1912. I think so. We didn't hatch any very late ourselves. We kept on selling eggs until about the close of the season I think.

I was in close touch with the poultry business and interests in and around Muskogee about that time. There seemed to be quite a good deal of interest among the people interested in the poultry business here in Muskogee in this incubator at that time.

I know other people brought eggs to the incubator to be hatched.

(Objected to as hearsay.)

There was a charge made for the hatching of these eggs by Mr. Hastings. As well as I can recollect it was one (.01¢) cent an egg. I am not very positive about that, but I think so. I think that is right.

Q. Please state what your opinion is, Mr. Brewer, as to [fol. 909] whether or not that incubator of Mr. Hastings was an operative machine or not?

Mr. Ely: I object to that as calling for an opinion. We were interested in facts.

Q. You understand, Mr. Brewer, in taking depositions of this kind, the lawyer has the right to make objections to any questions asked, and the Court later passes on it.

A. Yes, sir. Please state the question again.

Captain Greer: Read the question, please.

(Whereupon, last question above set out is red by Reporter as follows: Please state what your opinion is, Mr. Brewer, as to whether or not that incubator of Mr. Hastings was an operative machine or not.)

A. Yes, it was an "operating" or "operative" machine. I don't hear very well and I don't get all of those words.

Cross-examination.

By Mr. Ely:

I think Mr. Hastings operated this incubator and built it up as he went along. I think he did, yes, sir. That is, when he first started out in operation he only had a part of the incubator built, and then added parts afterwards. That is my recollection. As to how many compartments he started out with, I don't remember about that, I am sure. I remember when he first started out he only had a portion of [fol. 910] the compartments he finally had. Well, I think that is right.

I not only brought eggs in there to be hatched, but I also took eggs and sold them to him, and then he hatched the eggs himself. We sold them to the Company. I don't know who was the Company. We sold the eggs to him. He is the one who paid us for them. And in all we furnished this hatchery about 1,000 eggs. That is the best of my recollection, with what we had hatched ourselves. We had only 200 or 300 of that 1,000 eggs hatched. That is, we only got the product. We furnished the eggs to be hatched and the eggs which we sold about the same time, during the same season. We sold him the eggs after we finished hatching what we wanted. That is to say, my recollection is, of the 1,000 only 200 or 300 of these eggs were sent in to him for hatching for us. These chicks we got, these 75%, I was reckoning that on the 200 or 300. The eggs I carried for myself, somewhere about that, yes, sir. The kind of eggs we had were Rhode Island eggs. As to whether the chicks delivered to me by Hastings were the chickens hatched from those eggs, I am under the impression they were. You want me to tell why? Because we were handling some high priced chickens and we kept an eye on it closely. There were not so many Rhode Island Reds raised in this community at that time. That was kind of the commencement of the Rhode Island boom here in this town. But so far as I know, so far as my knowledge is concerned, the chickens we got from Mr. Hastings might have come from some eggs other than ours. Well, of course, they might have.

[fol. 911] Deposition of VAN D. CAMPBELL

VAN D. CAMPBELL, was called as a witness on behalf of the defendants, and after being first duly sworn, according to law, testified by deposition as follows, said deposition being offered and received in evidence:

Direct examination.

By Captain Greer:

My name is Van D. Campbell. I think I am forty-two and I live in Muskogee, Oklahoma, at 1051 York Street; born in '92. I am a carpenter; cabinet maker.

My wife runs the Marathon Hatchery and I help her quite often. My wife has been running this Marathon Hatchery for eight years, I think. I am familiar with the hatchery end of the business that my wife has been running. I set up the hatchery several times, and I set up Mrs. Hill's hatchery. I have installed incubators myself as a carpenter, too. I only have to do with the running of the Marathon Hatchery, only as a helper. My wife runs the hatchery. Sometimes when I am not busy I help her.

I do not know Mr. Milo Hastings. I know something as to an incubator or hatchery being operated in Muskogee, Oklahoma, during the year 1912 by Mr. Milo Hastings. We came down here from Kansas in 1911, moved off of a farm at Ottawa, Kansas, and we had eggs hatched there and that is how I happened to know about it. It was down on North 4th Street behind what was then known as the Hinton Theater. I had eggs hatched there. As to the re-[fol. 912] sult I obtained from the eggs which I had hatched there—well, it has been so long ago I don't just remember. We got chickens, but I don't remember just how many chickens we got. I know that it hatched chickens.

I saw the incubator in operation myself. It seemed to me that it was made out of a—it was a room converted into an incubator; was sort of a marvelous thing to people in those days, because seemed to me it was the very first one anybody ever walked inside of. You opened a door and walked right in and there were chickens and trays there of eggs. It was a brick floor, I think, and he had some kind of a circulating system, and he had chickens hatching

in there, thousands of them; an awful mass of eggs and chickens seemed to me when I was a boy; don't know how many there were but seemed like a lot of them.

The incubator my wife operates at the Marathon Hatchery is a Buckeye No. 7. The size of the Hastings Incubator in comparison with this Buckeye No. 7—well, I imagine—of course you can't tell—incubators nowadays have eggs more compactly arranged. Seemed to me he had great big trays but the room was about as big as this room right here; maybe not quite as big. I would estimate the size of this room about fourteen (14 x 20) by twenty.

I saw the incubator in operation several times. It must have been 1912 because we came here in August, 1911, and that was too late to hatch chickens and we hatched chickens the next year. I paid for having those chickens hatched. They were all our eggs that we had custom [fol. 913] hatched. They were Rhode Island eggs I suppose. That is the only kind we had on the farm.

I do not recall what kind of circulation that was in the incubator. Was a terrible roar in there. I know it had some kind of fans. Seemed most trouble with Hastings was mixing up his chickens. Most people complained of taking Rhode Island Red eggs there and getting Barred Rock chickens, and vice versa. I mean that was the current talk. He was all head over heels in his invention and he forgot about the business end of it. Don't think he ever made it pay.

(Objected to as speculative.)

My trade was that of a carpenter. From my experience as a carpenter, and my knowledge of the incubator business in connection with that one operated by my wife in which I help, I think this incubator was a success for those days. It hatched chickens, undoubtedly.

Cross-examination.

By Mr. Ely:

When I say "we" hatched eggs, and "we" paid for the eggs, and "we" paid for the hatching, I mean just three of us. Me and my father and mother. I always lived with them before I got married. I suppose those were my parents' eggs taken down there. I must have been about

twenty then. My parents are still living. My parents live here in Muskogee. We have always lived together.

Mr. Ely: I object to the testimony of the witness on the additional ground that obviously he is not the one most familiar with the operations described.

(It was stipulated by and between counsel that Messrs. [fol. 914] Greer, Taggart and Ely visited, during the recess, the farm of Mr. Hastain, and there inspected the Blower which is shown in "Defendants' Exhibits 22-B to F", inclusive; that the Blower bears the mark "made by the American Blower Company, of Detroit, Michigan", and is a No. Two and one-half (2½) Blower, as marked thereon; stands about thirty-four (34) inches high; the intake opening at the center is fifteen (15) inches in the inner diameter at the outside of the housing, tapering to approximately twelve and three-quarters (12¾) inches in diameter immediately adjacent to the rotor; the outlet opening is eleven and one half (11½) inches in the inner diameter, and twelve (12) inches in the outer diameter.)

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Deposition of L. A. Cory

L. A. Cory, was called as a witness on behalf of plaintiff in rebuttal, and having been duly sworn according to law, testified by deposition as follows, said deposition having been offered and received in evidence.

Direct examination.

By Mr. Ely:

My name is L. A. Cory. I am sixty-one years old and live at 810 Elgin, Muskogee. My present occupation is C. W. A. Time Keeper.

I was interested at one time in poultry in and around [fol. 915] Muskogee. I had fifty (50) to one hundred (100) fowls at a time for years; sometimes more. As to the kind of chickens, they were Buff Cochins. I operated this chicken industry from 1900 continuously up until approximately 1930, not always the same breed of chickens, but then I had chickens all that time. During the year 1912 I

had Buff Cochin chickens; from three to four dozen hens, I couldn't say the exact number, forty or fifty.

I was here in Muskogee at the time Milo Hastings had an incubator here. I was reasonably acquainted with Milo Hastings at the time. As to how I became acquainted with him, it became common knowledge that he had a big incubator here and that was a novelty, and I was interested in chickens, and I went to the incubator there and saw the incubator, and saw Mr. Hastings and became acquainted with him. At that time I was a member of the Poultry Association known as the "Muskogee Poultry Association". I took some eggs down to Mr. Hastings' place to be hatched, several times. I can't remember exactly how many times, possibly as many as three and probably more times than that. I took down there one hundred (100) or more eggs at a time. I secured no result; no chicks. Three or four different times and got approximately no chickens at any time. I don't believe Hastings gave me any excuse, any more than he said they didn't hatch; don't remember any other reason.

I was hatching eggs from the same flock at the same time, and selling eggs. From the eggs I hatched I got, oh, fair hatch, sometimes three-fourths hatch and sometimes 50%. [fol. 916] So far as I know, there was no reason why my eggs wouldn't hatch, that is, there was not anything attributable to the eggs. I think not. The same eggs which I took to the hatchery, those eggs hatched for other people. Yes, sir, fairly so. Yes, I had complaints from other people as to my eggs, but no complete failure except the eggs I took to Mr. Hastings. I had fair results, or what I would say was fair results, from the eggs which I took to hatch elsewhere.

As to what the sentiment was, as far as the Poultry Association was concerned, towards the Hastings Hatchery, the members of the Association were all friendly to it; were glad to see the hatchery come in here; don't know as the Association ever went on record any way. They didn't buck Hastings. There was not any objection to it as to the Association or as to the members. They would have been glad to see Hastings operate it, if it had been successful, for the reason that it was an easy way to have our eggs hatched, while, as far as I know, there wasn't anybody here sold day-old chickens up to that time, but easier than hatch-

ing under hens, and simplified our problem, and could get out chickens earlier than hatching under hens. They would have been very glad if the Hastings proposition would have been a success. His price might have influenced it, but they would have been glad to have the hatchery here. Yes, sir, I am sure they were. It would have been a big thing for Muskogee.

Cross-examination.

By Captain Greer:

As to how many times I visited this hatchery of Mr. Hastings—well, now, of course it has been a good many [fol. 917] years, I couldn't tell, I worked in a plumbing shop that I had to go by there to go to work, and I suppose I have been by there twenty-five times. That is, of course, just an estimate. Not in the inside of the hatchery. No, possibly not. In the room where it was though. I went on the inside of the hatchery a few times. I saw it then in actual operation. I can't tell from memory how long it continued to operate. I don't know. Well, it is my opinion that it operated throughout the whole hatching season of 1912. I can remember the circumstance of Milo Hastings leaving, but when it was, I can't remember.

I knew that Judge John Lieber was interested in the incubator too, and also a Mr. Hastain.

Q. And didn't they operate it the next year after Mr. Milo Hastings left? Didn't Mr. Hastain operate the incubator also?

A. I am reasonably sure he did, although I wasn't in it at the time he operated it.

As to what particular attention I paid to the breeding of the hens from which I procured these eggs which I took to Mr. Hastings, well, I considered myself a good breeder and had for a number of years this particular strain of chickens. They were Buff Cochins. I did say I received complaints from others to whom I sold eggs, as to the eggs not hatching in some instances, but never as to a complete failure. I never got any results at all from the eggs which I took to Mr. Hastings. Not a chicken. That is the reason it was

impressed on my mind. At that time I thought some of those eggs hatched.

I heard that Mr. Hastings was operating sort of a breeder or place where he was raising chickens a little north of Mus-
[fol. 918] kogee. I don't know that. I heard it though. At the time it wasn't my idea that Mr. Hastings hatched some of my own eggs and took them and put them out on this farm, but I might have thought it the next year afterwards after hearing talk. I did hear such talk as that: That he would take eggs in and tell the people that brought them in that they didn't hatch, and then he would hatch those eggs and take them out on his farm. I heard the talk.

The price Mr. Hastings charged for hatching these eggs was one (.01¢) sent an egg when you put them in. I would judge the hatchery was pretty well patronized by people interested in the poultry industry at that time, and created a good deal of interest among people who were interested in the poultry industry here. I knew Mr. Hastings personally.

I did not see this incubator in operation the next season, hatching season of 1913 at all when Mr. Hastain was running it. It is my recollection I was never there after Mr. Milo Hastings left.

When I took these eggs down, I saw chickens in his brooder room there. He had a stove pipe for a brooder. I presume for that. I never saw him taking any chicks out of the incubator.

I know Mr. C. T. Brewer fairly well. I never saw him bring any eggs there to be hatched.

Outside of this experience with the Hastings Incubator, I never had any eggs hatched in any other incubator right then. Late years I have had Hogan hatch for me. Well, I had reasonably good success there, 70 or 75% probably. Later on I had a small incubator at home and generally hatched my own chickens. I had Hogan hatch for me, well, [fol. 919] probably the spring of '92, last time. —'32. I said '92.

Redirect examination.

By Mr. Ely:

I am not really sure that Mr. Hogan runs a Smith Incubator. I saw the incubators, but I don't know.

Deposition of RICHARD SHANAFELT, Tuesday, Feb. 27, 1934

RICHARD SHANAFELT, was called as a witness on behalf of plaintiff in rebuttal, and after being first duly sworn according to law, testified by deposition as follows, said deposition being offered and admitted in evidence:

Direct examination.

By Mr. Ely:

My name is Richard Shanafelt, commonly known as "Dick" Shanafelt. Park Hill, Oklahoma, is my address. My age is fifty-four and my present occupation is hard to define. I live on a farm but I don't actually do farming myself. I moved on a farm and started a little fruit farm and poultry and one thing and another like that.

I came to Muskogee January 2, 1907; lived here until June of 1931. I remember the construction in Muskogee of a hatchery run by Milo Hastings and Mr. Lieber. I was interested in poultry raising at that time. I raised at that [fol. 920] time principally Black Orpingtons. I specialized in Black Orpingtons. That was a standard breed of chicks at that time. I had been successful on an original scale in raising my Orpingtons, not a large breeder, but kept a flock, say, from seventy-five to one hundred. The best in the United States, you might add.

I became a customer of the Hastings Hatchery. I took eggs there—couldn't state exactly how soon after he opened, but it was almost immediately after his starting the new hatchery, to the best of my knowledge. I took eggs there to be hatched. To the best of my memory at this time about 200 eggs; might have been a few less or a few more, but I believe that will practically get the number. If I remember, it was about that. I got a very poor hatch. As to just how poor, I have been thinking that over and it may have been five or six or, possibly seven, but I am sure not more than that; may have been a few less. Just a very small—practically nothing as far as results. My eggs proved fertile under other conditions at that time. If I am not mistaken, I set other settings of eggs under hens from that time on and very shortly afterwards I got an incubator, a 300-egg incubator of my own and had fair results with subse-

quent hatchings about that time. I did not get poor results as I did with Hastings. No, sir, I had a vigorous, good bunch of chickens, unusually so. I wish I had them now. I did not take any subsequent hatchings to the Hastings Hatchery. No, just the once, because it was generally considered a failure and most of the breeders here considered it a poor hatch. If you will permit me to say, that was in [fol. 921] answer to the question as to why I did not take more there. As a result of my own experience.

I was a member of the Poultry Association here in Muskogee. I joined when they first started the Muskogee County Poultry Association.

As to the sentiment toward the Hastings Hatchery at that time it first started, the feeling among the breeders, I was in very close touch with them. They were very glad to see the Hastings Hatchery come here and on very friendly terms with it; wanted it to be successful because it meant a greater poultry industry in this community and therefore greater sales. The concensus of opinion after Hastings had been running here a while was one of disappointment. That, as I say, nothing but a friendly feeling existed, and very much disappointed that they considered it a failure.

I knew Mr. S. J. Anderson, who was at one time Secretary of the Association here, quite well. He died, I believe about six years ago; possibly longer.

I saw some of the mechanical features of this Hastings Hatchery, particularly the fan that was used. As to the sort of a fan that I saw in there—I am not very clear, but to the best of my memory it was something similar to something, say, about a fourteen inch electric desk fan, as you will see today; used also in fans outside; and I believe it was stationary, and to the best of my memory it was a fan of that nature set in there for the purpose of circulating the air, or something. I never have been an Incubator Expert, but it [fol. 922] was something of that principle.

Q. Would you recognize a picture of that fan if I showed it to you, Mr. Shanafelt? You think you remember it well enough?

A. I am not right sure.

I am shown "Defendants' Exhibit No. 25", or a blue print, rather, of "Defendants' Exhibit 25", and my attention is called to Figure 2 and the fan shown in that picture

and asked if that resembles the fan that I saw. The scale is so small and of course the arrangement is not clear. It was something of that nature but I am not sure whether that is as it was right at that time when I was in there or different. Of course I can describe the arrangement of the shed and everything he had in it. That fan is the type of what you call a "rotary desk fan". That is what I thought it was at that time, to the best of my memory, but that has been so many years ago and until recently my attention not being called to it. I stopped and studied over it and just recall the location of it and the general principle, and while, as I say, I may be mistaken, I was under the impression that he had something like an ordinary desk fan, one of these fourteen inch fans, but I don't want to call the set-up of it right at that time. I wouldn't want to be positive. I like to be fair on those things.

I received prizes for my breeding chickens in my flock. I was quite successful on my breeding. I took a great interest in it and mated as I thought properly and had great success at showings and have been advised by a Judge who judged in Madison Square Garden in New York and the Kansas City Coliseum that I had as good a flock of Black [fol. 923] Orpingtons as there were in the United States, and was advised to exhibit in those cities. It was in this same flock from which I took eggs to Mr. Hastings to hatch. I have some clippings I just happened to put in my pocket if there was any question as to my flock. I have some contemporaneous with these events. I think right about that time; before and after. Here is one, February 1, 1912. I think that was the result of a State Poultry Show, which was also an official A. P. A. Show. That was held here in Muskogee. That was held in January, 1912. It is a very poor write-up, but—You wish me to read it?

(Whereupon, witness reads from newspaper clipping, which is later marked for identification as "Plaintiff's Exhibit 101", as follows):

"It is a proven fact that in Mr. Richard Shanafelt, Muskogee has the best breeder of single comb Black Orpingtons in Oklahoma if not in the Southwest.

"At the Muskogee State Fair he won every first prize and sweepstakes, a silver loving cup and specials over all competitors in his breed. Then later at the Texas State

Fair held at Dallas, he won the most coveted prize in his breed, namely, first pen, over Orpington exhibitors from New Jersey to California. Then at the recent State Poultry Show held in this city Mr. Shanafelt won over the best pens of Black Orpingtons that have heretofore been shown [fol. 924] in the state, and over individual birds which have never been defeated until meeting Mr. Shanafelt's Black Orpingtons, at this show.

That was taken from the Muskogee County Republican under date of February 1, 1912. I didn't write this article that appeared in the paper. No, sir, I would have had a good one if I had written it.

Here is one I took because it is preceding that. This is taken from the Muskogee Daily Phoenix dated October 10, 1911. That is reports of the Eastern Oklahoma State Fair wherein they used to have a very large and good display of poultry. Among the poultry awards it gives here:

(Whereupon, witness reads from newspaper clipping as follows:)

"R. Shanafelt won everything in the Black Orpington class, capturing first cock, second cockerel, third cockerel, first and second hen, and first, second and third pullets. He also captured the $10.00 special for best cockerel in this line, also a special silver loving cup."

That is the same flock I furnished to the Hastings Hatchery. Then I have one of the later ones. This is a clipping from the Muskogee Times Democrat dated February 5, 1914. If I am not mistaken, that was also a State Poultry Show. It was labeled: "Eastern Oklahoma Agricultural Association, in the Scales Building," but I am positive that [fol. 925] was an official State Poultry Show for Oklahoma. Under the awards of the State Poultry Show given at that time, under "Black Orpingtons" (Reading from clipping):

"Richard Shanafelt, city, clean sweep of all premiums in this class."

That is the only reference. That gives all the poultry awards at that time of the various breeders and the reference to me.

(Counsel for the plaintiff then offered in evidence as "Plaintiff's Exhibit 101", photostatic copies of these clippings read by the witness.)

Muskogee was the center of a considerable poultry raising industry at that time. It was a very enthusiastic group of poultry breeders.

I knew a Mr. Cory, Mr. L. A. Cory here. He was a breeder of Buff Plymouth Rocks and Buff Orpingtons. And I also knew a Mr. L. W. Pitts who was a breeder. I think he is mentioned in one of those articles. He bred Single Comb White Leghorns. And S. J. Anderson is also mentioned, and also a Mr. S. J. Ward. I remember Mr. S. J. Ward, Sam Ward. I am not sure what was his specialty. According to the paper it was White Leghorns, but I don't recall, because he was not quite as active a competitor as many of the boys. Mr. Ward was known around Muskogee. I know who he was. At that time, if my memory don't escape me, he was an employee in the Muskogee Seed House, of which Ross Binding was Manager. I think [fol. 926] he still runs a string of seed houses through this country, known as the Binding-Stevens Seed Company at this time, with headquarters at Tulsa. I am referring to Mr. Binding, but S. J. Ward worked for him at that time here in Muskogee.

Cross-examination.

By Captain Greer:

I was raising both Prize and Utility chickens. I had a happy blending of the two. I do not think it a fact that with Prize Show Chickens the eggs from that class of chicken, as a rule, are less fertile than those of ordinary chickens, not when properly bred. Occasionally you will retain an unusually fine exhibition bird that may not have the fertility that the majority of your flock has, but I didn't make it a point to have strictly exhibition stuff and not utility. I got a very high percentage of eggs, in fact, at that time in comparison with some White Leghorn Breeders and others. I got a greater percentage of eggs than they did, just on two or three occasions in various sorts of weather when I made comparison with them. I had a fine egg producing bunch, unusually fine. As I say, I wish I had them now. I am speaking of fertility because I got results. Before I took these eggs to Mr. Hastings for hatching I hatched under hens and also—I can recall one other time I took some eggs to an individual, and that was Lewis Pitts that we have referred to. He had an incubator

there and at one time he had space there and he hatched a batch for me. The kind of an incubator he used was one [fol. 927] of—one of the old most favorite—old wooden incubator. Don't believe I can name it. No, I don't believe it was a Cyphers.

I am not sure what year it was I took to the Hastings Incubator and then I hatched out quite a bunch myself because I generally had ten or fifteen hens I was setting that I would hatch and out of that I would generally get a hundred or more chicks, very frequently have a hundred and fifty chicks, and would cull them down and get my flock from those, and very shortly after that I believe it was I bought me a metal incubator manufactured in Tulsa, called the Blue Ribbon.

I can't recall how many I took to Mr. Pitts to hatch for me. I would guess something around seventy-five or possibly a hundred. I just took one batch to him. I didn't take any more to him because if I could get me twelve or thirteen chickens out of a setting of fifteen eggs, and had, say, ten or fifteen or twenty hens, and the space there, I didn't have any occasion to take them. I recall I got a pretty fair hatch from this batch I took to Mr. Pitts for hatching, say, seventy-five chickens out of one hundred eggs. I believe it was along when it was quite cold or something of that kind and I think he remarked at the time he had let them get chilled or something. I just have a faint remembrance that I was pleased with the results I got with the way he had reported.

I had never seen an incubator of the size of this Hastings Incubator at the time I took this batch to him. That was [fol. 928] going to be quite a wonderful thing for this City. According to my recollection, it was about two hundred eggs that I took to Mr. Hastings to hatch for me, and that was shortly after he opened up for business. He was conducting a regular Commercial Hatchery. It must have been early in January of 1912. That would be the best of my recollection, I am quite sure.

I went into the Hastings Incubator and looked at it. That was where I saw this fan arrangement that I spoke of. As to its being just a similar sort of a fan as the exhaust fan that you see in a movie house, for instance, I can't recall it that way. My memory is not right clear on it but I was under the impression that when it was set up—forget whether it had some sort of funnel for the fan or the fan

was setting up on a shelf, to circulate the air. The machine was in actual operation when I saw it there. I don't know whether it was hatching chicks or whether it had. Mine may have been one of the first batches put in. I know it was right in its infancy, when it first opened up that the various breeders decided to put some in to see what it would do, and we were anxious to help him get started and going. I know that he did actually hatch chicks in that incubator, regardless of the percentage of the hatch. I am sure, at that time, I got—seems to me it was two or three chickens out of my batch that were white chickens and I was breeding black chickens. I know it hatched some chickens. In other words, it may have been there was something wrong with the handling of the eggs, so that when you went to get the chicks which had been hatched, you got chicks [fol. 929] of a different breed from the eggs you left with Mr. Hastings to be hatched, I wouldn't say. I know there was something wrong with it. I don't know what it was. I am not an Incubator Expert.

Q. Well, you don't think it would be possible for an incubator to change the breed of the eggs?

A. It is true. Of course, I forgave him for it. I knew it was just one of those unfortunate occurrences.

Q. That would go to the handling of the eggs by the man operating the incubator, and not the operation of the incubator itself?

A. Yes, I tried to locate my missing chicks but I know I couldn't find them.

Q. And that was pretty commonly the rumor and belief around here about the way that the Hastings Incubator was handled? That you would put in eggs of one breed and get out chicks of another breed?

A. Yes. Of course I held sort of a lenient feeling toward him at the time and thought he rather regretted handing back such a small amount of chicks, and so put in a few extras. That was just my surmise.

Q. Do you know whether or not Mr. Hastings was raising chicks, or a breeder, out on a farm at the same time?

A. He didn't have the reputation of being a breeder; may have just started something of that kind. If he did that was an arrangement that most of the boys didn't know about.

Q. That machine was operated throughout the hatching season of 1912, wasn't it?

A. I am pretty sure it was.

Q. And do you know when Mr. Hastings left Muskogee?

[fol. 930] A. I am not clear on it. It seems to me—May I speak on the side on it? It seems to me he ran that awhile, and finally ran that awhile, and decided to leave, and Ed Hastain tried to take it over awhile and see if he couldn't operate it awhile.

Q. And he ran it awhile?

A. And then I think it was abandoned as a success and he decided to abandon it because it couldn't be run as a success or something of that sort.

Q. You are merely expressing your opinion as to why it was abandoned?

A. Just hearsay and common talk among the poultry breeders. Naturally we kept in close touch with things. We had regular meetings; I believe we had regular weekly meetings at that time. I am not positive but I think we did.

Q. It would be possible, wouldn't it, Mr. Shanafelt, that it would be abandoned because it did not make a financial success, regardless of whether or not the machine was practical?

A. That may be true, that it was found to be not a financial success, but I am positive that was the consensus of opinion among the breeders, that they could not get it to running successfully in order to get the eggs in and in order to make it a success.

Q. At any rate, your experience with the machine was only the one attempt to have your eggs hatched, and that was at the time when this fan was in this incubator?

A. Once was enough until I learned it was successful and I felt assured of getting a reasonable hatch, and I never found that to be the case, and therefore put no more eggs in there.

[fol. 931] Q. You never tried it but this one time yourself?

A. No, but was in constant touch with the situation, but not the actual operation of it.

I know Mr. C. T. Brewer, who used to be General Delivery Clerk at the Post Office.

I have a recollection of his breeding poultry sometime back, but I am not clear now just of the time. There were quite a few who stood out above the others who took a

greater or more active interest in the meetings and organization work and all of that. There were a few breeders in there who had pens and sold chickens but did not enter into it as enthusiastically as others, and there are a few of those whom I have forgotten.

I could not state with any positiveness what charge was made for the eggs which I took there to be hatched. But there was a charge made. In other words, it was run as a commercial enterprise.

I know that several poultry men in this community visited the incubator to see it in operation, and I feel sure that practically all of them did. Naturally it created quite a—you might say, excitement—don't know what you would call it—friendly feeling and enthusiastic feeling and they were glad to see it come and locate here and all wanted to see it.

I never set any eggs with Mr. Hogan. I have met him but wouldn't know him if I met him on the street. Mr. Hogan, if he was a breeder at that time, was not an active member of our Association in that period. Of course I know of him now by hearsay on account of him having been in the incubation business. I have not raised any real good [fol. 932] class of chickens since that time.

I was in the Indian Title Research Work, my business being all before the Federal Government or Department, and my work became very slack at that time and I was going behind financially instead of ahead, and I procured a little farm out in Cherokee County.

I am not actively raising chickens now, only a small flock and I was unsuccessful in getting a good bunch of chickens.

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### Deposition of Samuel J. Ward

Samuel James Ward, witness, being duly sworn and examined on behalf of plaintiff, testified at New Orleans, La., March 1, 1934, by deposition as follows, said deposition being offered and received in evidence.

**Direct examination.**

**By Mr. Ely:**

My name is Samuel James Ward. My residence is 627 Lansin Street, Tulsa, Okla. My age is fifty-three years. I

am now District Manager for the Emerol Manufacturing Company. And I am now in New Orleans on business for the company.

I used to live in Muskogee, Okla. I lived there during the years from 1911 to 1913. I was with the Binding Stevens Seed Company at that time. They were selling seeds, poultry feeds, incubators and supplies. I personally [fol. 933] had to do with the selling of incubators for this company.

I would say that Muskogee was the largest poultry center in that part of the country at that time. I recall an incubator erected in Muskogee about that time known as the Hastings Hatcheries. I know Mr. Hastings. I was in Mr. Hastings place of business where he had the incubators several times. The first time I was in there was a short time after he had completed it, and had run, I would say, his first hatch. I believe that was the first time I was in there. I was in there, you might say, a month from then, and then again in another month, maybe a month apart, three weeks or a month, something like that. Mr. Hastings did not send for me. The occasion of my being over there on my various visits was naturally being interested in incubators, I went up to see his plant. Mr. Hastings did not discuss with me the operation of the incubator—not going into details.

I did have a conversation with Mr. Hastings on one of these visits. The first one. He asked me why he could not get the incubator to work properly. I told him I did not know why it did not work. I was not familiar with large incubators. The only ones that I had knowledge of were the small types, and that I could not tell him, unless there might be some fumes maybe from some paper or something he had the outside walls lined with.

I know what sort of results Hastings got with this incubator. I came to know or learn this mostly from people who had hatches in there that I called on, and sold our sup- [fol. 934.] plies. I sold them incubators and supplies. The reports I got concerning the Hastings' hatches were that the first hatches he got, he did not get over from 5 to 20 per cent. of the fertile egg hatches. In those days we counted fertile eggs to get a percentage, which were candled afterwards. At first he got from 5 to 20 per cent. He remodelled the incubator. After he remodelled it, he got better hatches, but at no time did he get over a 50 per cent. hatch.

From my conversations with these poultry raisers around Muskogee, as to what their reaction was to the Hastings incubator, I learned that they would not give him any eggs to hatch, on account of the poor hatches they were getting. This feeling for the Hastings incubator affected my business in selling incubators by helping us to sell them. I sold incubators in that territory at that time. It was either in 1912 or 1913 that we shipped a straight carload of incubators in at one time. That would probably give you an idea of what we were doing with incubators. This carload was of the Mandy Lee, also Old Trusty and Petalouma. As to what sort of hatches we were getting out of these incubators, I would say from 75 to 90 per cent. of fertile eggs.

I saw some of the mechanism that was in the Hastings incubator, particularly fans. The kind of a fan that I saw was an ordinary circulating fan that is used in restaurants for drawing the heat away from over the ranges. I never saw any other type of fan in this incubator on any of my trips. I had seen a fan or fans in various locations in the [fol. 935] incubator. The first time I saw it, it was towards the back, up I would say three feet from the ceiling. The next time I saw it lower down, closer to the floor. I did not see any means of ventilation.

Cross-examination.

By Mr. Greer:

I work now for the Emerol Manufacturing Comapny. They manufacture a special breaking oil, top cylinder lubricating oil, a penetrating oil, and a top cylinder lubricating oil. My particular work with that company is District Manager.

As well as I can remember it was in 1914 when I left Muskogee. This Hastings incubator was not in operation there when I left. The Hastings Hatchery was in operation in Muskogee, to the best of my memory it was in 1911-1912, through two seasons, through two hatching seasons. In that section of the country the hatching season runs from approximately the first of the year to around the latter part of May or June. My best recollection is that this was in operation during the hatching season of 1911 and of 1912. Back that long I cannot give you the exact date. I think it was operated through two seasons. I do not think

Mr. Hastings was there the second season. I cannot recall the name of the person who operated it this second season. It was some attorney in Muskogee and another party were operating it then.

The first few months of the first season the Hastings Hatchery had quite a number of patrons. Later on they did not get any. I saw the incubator at that time. And at [fol. 936] that time it was operated with a fan for the circulation of the air, such as used in an ordinary restaurant.

I am asked to look at Defendants' Exhibit No. 25 in this case, Fig. 2 on Defendants' Exhibit 25, and state, if I can, what that Fig. 2 represents. (Counsel shows witness exhibit referred to and witness examines same.) It is a picture of a circulating fan. That is the character of fan which I saw in the Hastings incubator in Muskogee, and I never saw any other type or character of fan in it there. I believe it was covered. They had to open a door to see the fan itself.

As to the doors being arranged in that incubator so as to let in fresh air also, and likewise to let out foul air, from the outside, I didn't see any doors. If you were to open these doors that enter into the compartment where the fan was, that would not necessarily let in some fresh air. The doors were in the incubator itself. There were doors into a kind of an air take with the fan set in. You get into a door into the incubator, and then you had to open another one to see the fan in operation, to the best of my memory. If you were to leave both of those doors open, you could see from the outside then. Fresh air could get through those open doors, if they left the outside door open.

That air was heated. The arrangement for heating the air was a gas heater, to the best of my memory. A pipe coming from the gas heater went behind the fan, the air blew over these heated pipes. These heated pipes were at the same end of the incubator as the fan was at that time. I am positive of that. I am not sure whether there was any [fol. 937] exhaust pipe from those heated pipes that went out of the incubator or not, but I am positive they were in the same end of the incubator that the fan was in at every visit I was there. Mr. Hastings remodelled the incubator once that I know of. That remodelling consisted of changing the position of the fan, from the ceiling down lower.

There was no arrangement for maintaining moisture in the air in the incubator, none that I saw. No pan was there containing water at all. I am asked again to look at Defendants' Exhibit 25, and tell whether or not, according to my recollection, that is a correct picture of the operation of the Hastings incubator showing the fan. I believe it is. There was a pan right under that fan to contain water, and that pan is shown in that picture. I never saw any water in the pan. There was a pan there. I never saw any water in it.

I spoke of some fumes on account of paper lining the walls. I referred to the outside walls of the incubator, which were all lined with a kind of tar or creosote paper on the outside of the incubator. On the outside of the incubator. By the outside I do not mean the compartment where the eggs are. It was just as an insulation to keep the heat in, on the outside of the incubator. This paper was against the wall of the building, I mean. That building was located in Muskogee, to the rear and side of what was then known as the Hinton Theatre.

I do not remember Mr. Norman B. Hickox. I knew a Mr. Peabody with the Peabody Electric Company in Muskogee. I never saw him around that incubator at all.

[fol. 938] Mr. Hastings had some assistants, but just who they were I do not know. He supervised the building and construction of it. As to doing all the manual labor, I do not know whether he did it or not. I stated that after he remodelled it he got better hatches than he did at the first hatch he had, but never did get better than a 50 per cent. hatch. I know of no individual instance where he got a 50 per cent. hatch.

I know a Mr. C. T. Brewer in Muskogee. I do not remember any direct talk with him about the hatches he got from that incubator. I may have; I would not say yes or no. The names of some of them that I did talk with from whom I gained this information that after the remodelling he obtained better hatches, but never did get more than a 50 per cent. hatch, are: L. A. Corey, Richard Shanafelt, named Dick; those two, and H. M. Chestnut, I believe was another one. That is all I can think of right now. Their patronage of this incubator was while this exhaust fan, such as I have described, and is shown in Defendants' Exhibit 25, was being operated in the incubator.

I cannot recall the manufacturer's name right now who manufactured the Mandy Lee incubator which I sold. It was a standard make of incubator sold all over the country at that time. I do not know who the manufacturers of Old Trusty and Petalouma incubators are, or were at that time. No. I cannot give you the exact names on that.

The egg capacity of the Mandy Lee incubator was from 100 to 350 eggs capacity. The Old Trusty, I don't think [fol. 939] we had anything over 150. I think we had one or two 300 eggs capacity machines. They were incubators of small egg capacity. To the best of my recollection the egg capacity of the Hastings incubator was supposed to hold about 25,000 eggs. It was divided by partitions and there were slots that the trays slid in, and held the eggs in different positions, one above the other. I cannot remember the exact number of trays that were in each partition. There might have been as many as ten or twelve, and there might not have been more than eight. There might have been as many as 20 trays in each compartment.

I am positive that from my visits to this plant where Mr. Hastings was operating, that the thing was actually in operation and did hatch eggs, regardless of the percentage of the hatches. Yes, sir. And that was throughout the hatching season of the two seasons that I remember, and I think it was in 1911 and 1912.

You determine the fertility of the eggs by candling them after they have been set a week or ten days. It is an infallible test if a man knows what he is doing. I saw these eggs that were placed in the Hastings incubator tested for their fertility. They tested them there. Mr. Hastings did it. I saw him test them. I never placed any eggs in that incubator to be hatched myself. As far as my recollection goes, the only remodelling of the incubator of Mr. Hastings was the changing of the location of the fan from the ceiling to the floor. It was the same kind of fan that was used though.

I severed my connection with the Binding Stevens Steel Company, to the best of my recollection, in February, 1914. [fol. 940] I have had no experience with incubators since then. I am not an incubator specialist. What I can do would be to set them up and start them out for the customer. I had never seen an incubator of the capacity of this one prior to my visits to the Hastings incubator.

Redirect examination.

By Mr. Ely:

I operated incubators at that time myself. I raised chickens at that time and ran incubators. I received reports from people to whom I sold our incubators as to the percentage hatched of fertile eggs. They got from 75 to 90 per cent. hatch. A hatch of 50 per cent. or less would not be a successful hatch. If I did not have successful hatches in our incubators I sold, I would have soon heard about it. Absolutely.

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Deposition of Joseph Taggart

Joseph I. Taggart, Witness, being duly sworn and examined on behalf of plaintiff, testified by deposition as follows, said deposition being offered and received in evidence.

Direct examination.

By Mr. Ely:

My name is Joseph I. Taggart. I have already testified in this case. During the recess in the taking of the testimony in Muskogee on Monday the 26th of February, I went in company with Mr. Greer and Mr. Ely to a farm close to Muskogee to look at this blower that is shown in Exhibits 22-B to F, inclusive, those photographs. I was told it was [fol. 941] a farm belonging to Ed Hastain. We examined that blower that was out there that was alleged to have been the one that was used in the Hastings incubator.

I was present during the deposition of Mr. Hastings, taken in New York some time ago in this cause. I recall that at page 33 of the record Mr. Hastings said, referring to this alleged fan they were supposed to have had in the Hastings incubator: "The size of the fan or blower indicated in these drawings was that of a Sirocco blower with an 8" outlet." That was on page 33. And on page 80 in the direct examination, still Mr. Hastings testifying, he testified, as I recall: "That was a standard 8" blower—8" outlet." And again on re-direct examination, on page 147, Mr. Hastings testified: "None of these drawings are exactly to scale and my testimony as to the size of the blower and

its make is exactly—an 8" outlet Sirocco blower standard at that time." I recall that testimony.

The three of us measured the outlet opening of that blower. It was a blower manufactured by the American Blower Company, combining what is know- as the Sirocco wheel. It had an outlet opening that was 11½ inches inside dimensions, and would take a 12 inch exhaust pipe to fit over it.

Q. Therefore it was not the same blower that Mr. Hastings testified he used there in Muskogee, was it?

A. It was over twice as large as the one Mr. Hastings referred to. That is, I mean the area of the outlet was more than twice as large.

There were some questions directed to Mr. Lieber at the time he was on the stand there in Muskogee in my presence, [fol. 942] about my negotiations with him for the purchase of this blower. I did have some negotiations with Mr. Lieber on this matter, in the spring of—in April, 1926. It was after the Stone case and the Cooley case, and it was also after the Wolfe case. In all of these three cases which I have referred to, this alleged Hastings prior use had been thoroughly gone over by the defendants. I was not present at the Wolfe case, and I only know about that from the record.

As to my purpose in entering into this negotiation with Mr. Lieber, and what I had in mind—at that time I had been requested to get together duplicates on reconstructions of early methods of incubation for the purpose of studying them, and with that idea in view I wrote to Leiber asking him if the equipment which he told me about he had, if he would sell it, and I offered him $50.00 if he would send me the blower and trays which he had told me were a part of the original Hastings incubator. He replied that the blower or trays had no intrinsic value, but that to him they were worth $5,000.

I first saw this blower in August, 1926. It was after these negotiations I have been talking about. I then measured the outlet of the blower when I saw it in August, 1926, and it was the same as it is now, 12 inches outside diameter. Mr. Hastings testified in the Cooley case that it was an 8 inch outlet blower that he used at Muskogee.

Cross-examination.

By Mr. Greer:

In my negotiations with Mr. Leiber in reference to this blower, in addition to his stating that it was worth $5,000 [fol. 943] to me, I think Mr. Lieber made the stipulation that he did not want it destroyed. My negotiations came to nothing, I did not buy the blower. After I saw the attitude that he took in the matter, we did not pay any further attention to it.

The inside dimension of this blower at Muskogee was 11½ inches. I stated that Mr. Hastings had described that outlet opening as an 8 inch opening.

Taking Mr. Hastings' testimony, I have stated that his testimony was that it was an 8 inch opening, and then I stated that the area of the outlet was twice as large as that of Mr. Hastings. It is more than twice as large. An 8 inch outlet has a certain number of square inches of area, and 11½ inch outlet has over twice the number of square inches of area.

It was April 14, 1926, that I opened these negotiations with Mr. Lieber for that blower. My interest in buying it was based upon the assumption that it had been used in the Hastings' incubator in 1912 and 1913 at Muskogee. I had been told by Mr. Lieber that he had this blower, but at that time I had not seen it.

I first learned of the Hastings incubator being operated in Muskogee, I think in the spring of 1923. I learned of it in conversations with Dr. Smith. That would be my best recollection. I cannot say how I first learned of it; when I became associated with Dr. Smith in the spring of 1923 and we were in incubator work. Dr. Smith knew in 1923 there had been an incubator started down there.

[fol. 944] Redirect examination.

By Mr. Ely:

My reason for not carrying my negotiations any further with Mr. Lieber was not due to the fact that he had requested that the blower be not destroyed; that was not the reason I stopped my negotiations with Mr. Lieber. One thing that I had in mind at that time was that we would get up a museum of incubators, and that was part of our

reasons for wanting it. In fact, it was one of the main reasons, but when he put a price on it, such as he did, why then, we immediately lost all interest in it.

The above was all the testimony offered at the main hearing or trial of the within case. April 15, 1935, the following testimony was submitted to the Court at Buffalo, N. Y.

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ROBB O. BARTHOLOMEW

ROBB O. BARTHOLOMEW, called as a witness on behalf of the plaintiff, and sworn, testified as follows:

Direct examination.

By Mr. Ely:

My residence is 2930 Edge Hill Road, Cleveland Heights, Ohio. I am a practicing attorney in Cleveland. I have been a practicing attorney for approximately twenty-five years. I know Dr. Samuel B. Smith of Cleveland, the plaintiff in this case, and have represented him in matters. I represented Doctor Smith for a couple of years in personal matters and matters connected with some of his companies, [fol. 945] and also in reference to his dealings with the Buckeye Incubator Company, Springfield, Ohio. I recall the transaction by which the transfer of the title to the patent was made from the Buckeye Incubator Company to Doctor Smith.

I am familiar with the Smith patent in suit on the process of incubation. I recall negotiations and consummations of transfer in title as to this patent. There were negotiations beginning early January, 1926, culminating April 29, 1927, in the execution of assignments of the three patents, then owned by the Buckeye Incubator Company back to Doctor Smith. Those were assignments of patents Doctor Smith had originally procured on his inventions—incubators. Prior to April, 1927, title to the patents had been for a number of years in the Buckeye Incubator Company. I think the title ran back to about 1919—by assignment of application of patents to 1917. I think the patents came out in 1918 and they were then in the name of the Buckeye Incubator Company.

I am handed certain documents to which I refer. (Handing papers to witness.)

There is an agreement contract between Samuel B. Smith and the Buckeye Incubator Company—the first document that I hold. This is dated April 29, 1927. That is the contract which was drawn between the parties—executed by the parties embracing their agreement regarding the sales of patents—transfer of the title of patents back to Doctor Smith and his license to Buckeye Incubator Company under it. I was present when those papers were executed. I witnessed the execution of them. There were present at [fol. 946] the time they were executed—Arthur Hill, President of the Buckeye Incubator Company, Mr. Essex, Secretary of the Buckeye Incubator Company, attorney Cole from Springfield, Ohio, the Buckeye Company's attorney—regular attorney, and Mr. Staley from Springfield, Ohio, patent attorney, representing the Buckeye Incubator Company in patent matters, Doctor Smith, and myself. I recognize the several signatures there as the signatures which I saw made at the time these papers were executed.

Mr. Ely: I offer those documents in evidence, your Honor. I offer them in the following order: As Exhibit No. 32, the assignments from the Buckeye Incubator Company to Doctor Samuel B. Smith; as Exhibit 33, the license agreement from Smith back to the Buckeye Company; and as Exhibit 34, the contract between the Buckeye Company and Doctor Smith, all dated April 29, 1927.

(Mr. Toulmin examines documents.)

Mr. Toulmin: We object to Exhibits 33 and 34 in addition to our general objection that I first stated, on the ground that they are carbon copies, and are not the original documents. I have heard no proof here as to their being the originals.

Mr. Ely: They are original signed copies.

The Court: Do you mean duplicates?

Mr. Ely: Yes, but they are signed copies.

(The Court examines the documents.)

[fol. 947] By the Court:

Q. Mr. Bartholomew, this license or paper purported to be a license—is that the original signature of Mr. Smith?

A. It is, your Honor.

Q. Is that the signature made at the time of the execution of this paper?

A. It was.

Q. The paper was exhibited by you to the Buckeye Company in your presence?

A. This was delivered to the Smith Incubator Company.

The Court: I see.

Mr. Toulmin; I withdraw my objection, your Honor; that is proper proof.

Q. This signature to the other instrument, which is called "contract", dated January 29, 1927, purporting to be signed by Mr. Smith, A. W. Hill, R. A. Essex—are those the signatures of those individuals?

A. Yes, your Honor, there were copies delivered to Doctor Smith, and the other copy sent to the attorneys for the Buckeye Incubator Company.

The Court: Objection overruled.

(Assignment from the Buckeye Incubator Company to Doctor Samuel B. Smith received in evidence as Plaintiff's Exhibit No. 32.)

(License agreement from Doctor Smith back to the Buckeye Company, dated April 29, 1927, received in evidence as Plaintiff's Exhibit No. 33.)

(Contract between the Buckeye Company and Doctor Smith, dated April 29, 1927, received in evidence as Plaintiff's Exhibit No. 34.)

[fol. 948] The Court: Is there an admission that these patents were issued to the Buckeye people?

Mr. Ely: Yes.

The Court: All right.

This concluded the testimony of the witness Bartholomew.

JOSEPH I. TAGGART, recalled on behalf of the plaintiff, testified as follows:

Redirect examination.

By Mr. Ely:

I am shown photostatic copies of Exhibits 32, 33 and 34, which have just been offered in evidence on behalf of the plaintiff. I am familiar with those documents. Those documents are still in force.

Q. In the matter of bringing suits under the patent, Mr. Taggart, has Buckeye Incubator Company requested Doctor Smith, do you know, to bring suits under the patent?

Mr. Toulmin: We object. The Buckeye Incubator Company again is not here. The Buckeye's rights cannot be determined without them being here.

The Court: Is that offered to preclude the right of the Buckeye Incubator Company to make any claim?

Mr. Ely: Yes.

The Court: I will exclude it then, in view of my prior ruling.

Mr. Ely: Exception, your Honor. That's all.

[fol. 949] Mr. Toulmin: I hope your Honor will not think I am captious, but I want to make a perfect record on this. If the Court please, I now move for a judgment on behalf of the defendants in this case so far as the title is concerned—the other part is still awaiting your Honor's decision—on the ground: first, that there has not been made here proper proof of the title in S. B. Smith, the patentee; second, no proof has been made in this case with the proper and necessary parties before the Court, the Buckeye Incubator Company being absent from the presence of the Court, and it being a necessary and proper party for the disposition of the entire rights and interests under the patent so far as these defendants are concerned, and so far as the ownership of the patent is concerned. We therefore move the Court for such judgment on behalf of the defendants for those two reasons. I might say to the Court that I have submitted a memorandum on the subject of the insufficiency of the parties which is still before your Honor.

You have overruled me on the other proposition to which I took an exception.

The Court: Yes. In view of the matter as it stands today, this Court is controlled by the decision of the Supreme Court as to the infringement by the defendant—the infringement itself—and it is my view that the fact that a portion of the eggs in the process of incubation or hatching are removed from the hatchery and the process concluded [fol. 950] in a separate place does not differentiate this case from the decision of the Supreme Court involving this patent. It is my view that the title to the patent has been established by the record now, and the only question I would like to look at a little further is the question whether the Buckeye people should have been made a party to this suit by reason of the nature of the license granted them. That is my view-point. That is my view. The remaining point is—I will look that over.

The foregoing contains all the testimony offered in these cases, the same being reduced to a narrative form pursuant to Equity Rule 75 (b) except where set forth verbatim in question and answer form in order that the same may be more clearly understood.

The defendants present the above and foregoing as their narrative statement of all the evidence in the case submitted or offered before the District Court and pray that the same be approved by the Court, signed and sealed as such and made a part of this record.

Toulmin & Toulmin, Attorneys for Defendants.

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ORDER APPROVING NARRATIVE STATEMENT OF THE EVIDENCE

The foregoing narrative statement of the testimony in these cases is hereby approved by me and ordered to be made a part of the Record in these cases, this the 2nd day of December, 1935.

John Knight, U. S. District Judge.

671

S. B. SMITH.

INCUBATOR.

APPLICATION FILED OCT. 26, 1916.

1,262,860.

Patented Apr. 16,

2 SHEETS—SHEET

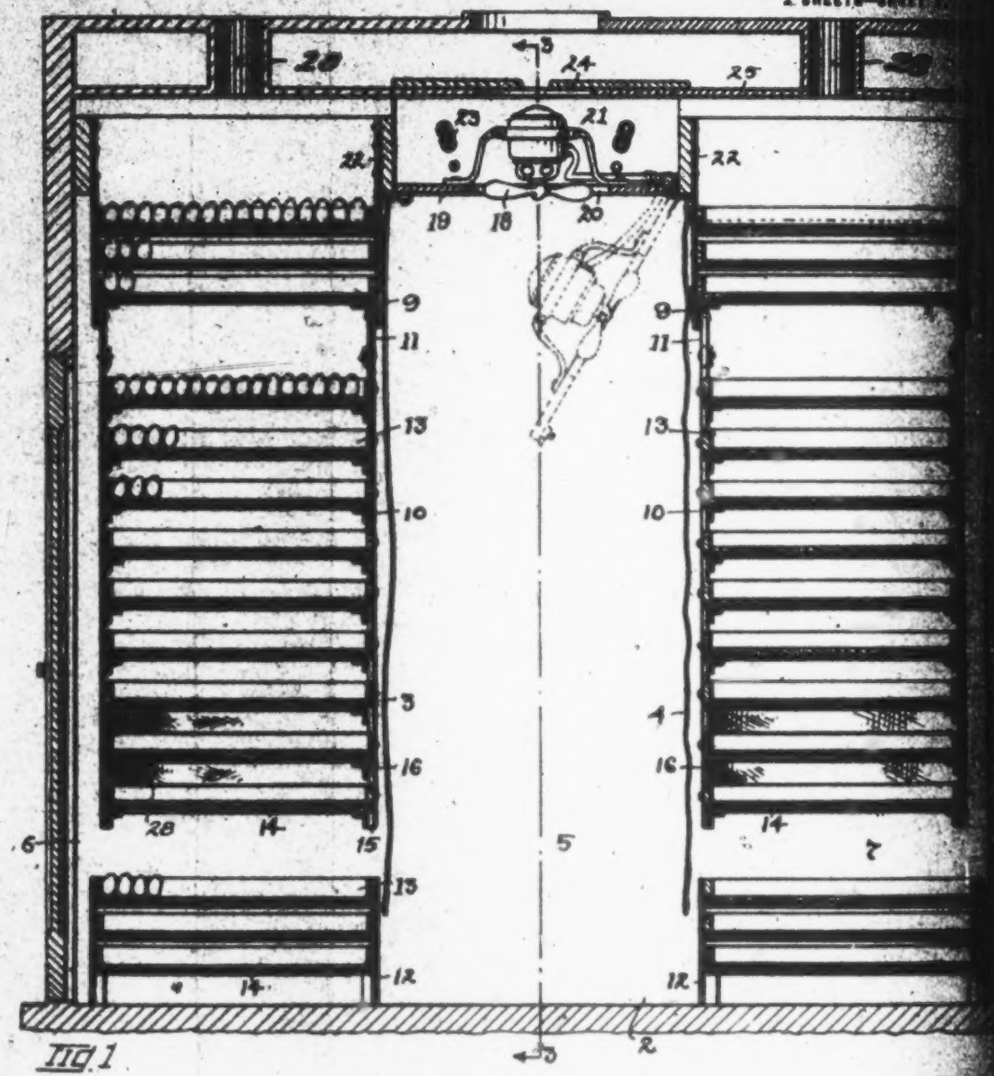


Fig. 1

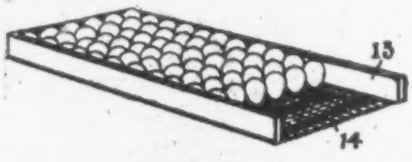


Fig. 2

INVENTOR.
S.B.SMITH.
BY Staley & Bowman
ATTORNEYS

672

S. B. SMITH.

INCUBATOR.

APPLICATION FILED OCT. 28, 1916.

1,262,860.

Patented Apr. 16, 1

2 SHEETS—SHEET 2.

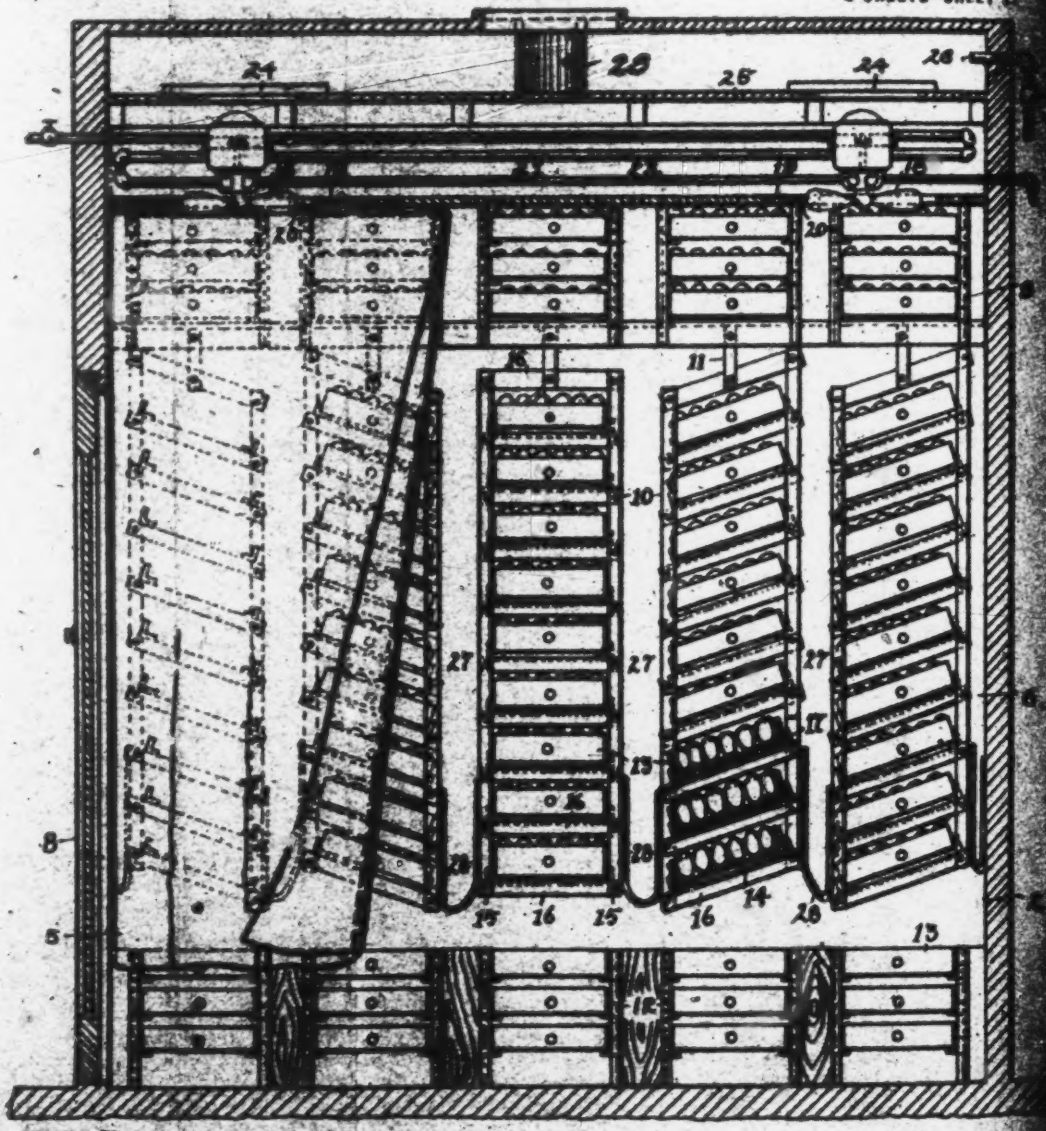


FIG 3

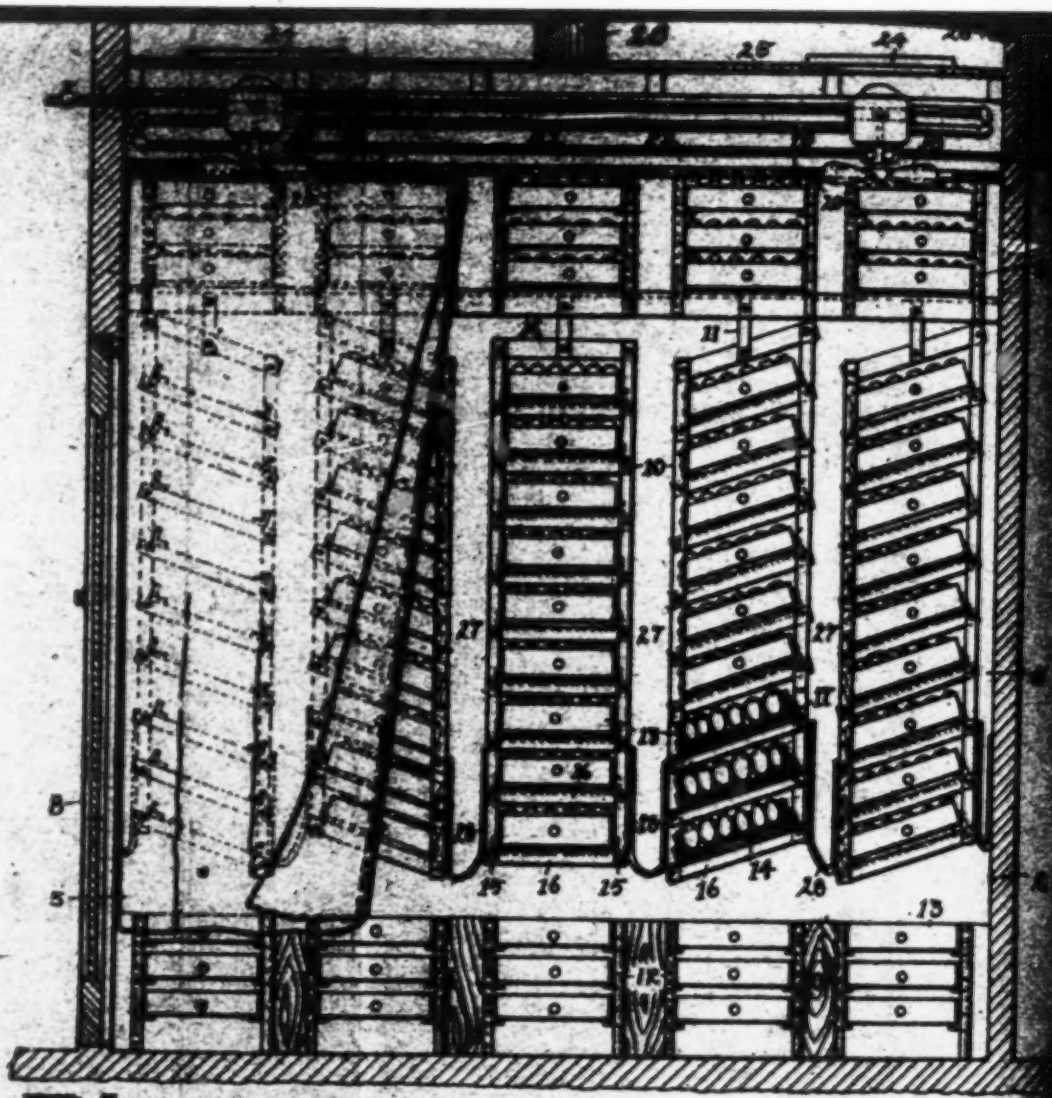


FIG 3

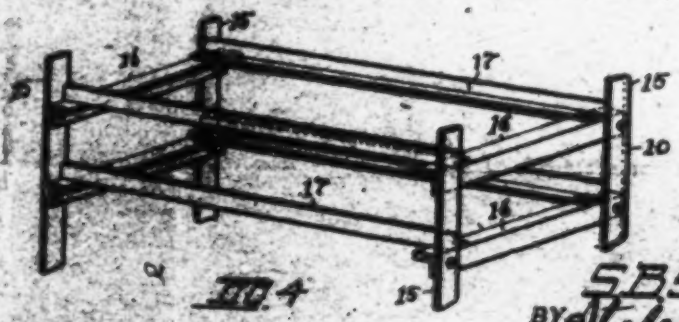


FIG 4

INVENTOR.
S. B. SMITH.
BY Staley & Bowman.
ATTORNEYS.

# UNITED STATES PATENT OFFICE.

SAMUEL B. SMITH, OF CLEVELAND, OHIO, ASSIGNOR TO THE BUCKEYE INCUBATOR CO., OF SPRINGFIELD, OHIO, A CORPORATION OF OHIO.

## INCUBATOR.

1,262,860. Specification of Letters Patent. Patented Apr. 16, 1918.

Application filed October 26, 1916. Serial No. 127,915.

*To all whom it may concern:*

Be it known that I, SAMUEL B. SMITH, a citizen of the United States, residing at Cleveland, in the county of Cuyahoga and State of Ohio, have invented certain new and useful Improvements in Incubators, of which the following is a specification.

The improved apparatus and method, is particularly designed for extensive operations wherein a chamber of large dimensions is adapted to contain thousands of eggs in separate trays arranged in tiers and the method of heating is such that the heated air is adapted to the eggs in various stages of incubation. There is a forced circulation of hot air through the chamber which is adapted preferably to maintain all eggs at temperatures between 100° and 105° Fahrenheit approximately and this improved system contemplates that fresh eggs will be placed in a horizontal plane, preferably by means of trays supported in horizontal planes, and after the eggs have been subject to the circulation of hot air for a predetermined time (the air circulating largely around the eggs) they will be placed in a tilted or inclined position in a different location but still subject to the same column of air and at this period of incubation they will be tilted in different planes at regular intervals during the time they remain in this latter position, and after they have remained for a predetermined time they will be again moved to a different position with reference to the forced circulation of hot air and so placed therein that the air will tend to keep the eggs below 106° temperature, and in this last named position the air will be forced to pass [illegible] and will in effect

In the accompanying drawings:

Figure 1 is a cross section of my improved incubator.

Fig. 2 is a perspective view of one of the egg trays with one end removed to more clearly disclose the open mesh bottom.

Fig. 3 is a vertical section of the incubator on line 3—3, Fig. 1.

Fig. 4 is a perspective view of a portion of one of the tilting racks for the trays.

The invention comprises a walled chamber 2 corresponding in size to that of an ordinary room, say approximately nine feet high, eight to ten feet wide, and of any desired length, and this chamber is subdivided longitudinally by two parallel rows of curtains 3 and 4 to provide a central compartment or corridor 5 and side compartments 6 and 7. Entrance to the corridor is gained by a door 8, and the compartments behind the curtains contain elevated stationary racks 9 which are within convenient reach of the attendant for introducing the fresh supply and from which elevated position the trays may be shifted at the proper time to a tier of tilting racks 10 on a lower plane and suspended therefrom by links 11. A series of stationary racks 12 are also arranged beneath the tilting racks 10, and all of said racks are of open construction and of the same size to permit interchange of the shallow trays 13 for the eggs to be hatched. These trays are provided with open mesh bottoms 14 upon which the smaller ends of the eggs rest in close and solid formation, and each tray of eggs occupies the upper [illegible] rack 9 for the first three days, and is then transferred to a place in the upper end of the tilting rack 10. During the next fifteen

Application filed October 26, 1916. Serial No. 127,815.

*To all whom it may concern:*

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The improved apparatus and method, is particularly designed for extensive operations wherein a chamber of large dimensions is adapted to contain thousands of eggs in separate trays arranged in tiers and the method of heating is such that the heated air is adapted to the eggs in various stages of incubation. There is a forced circulation of hot air through the chamber which is adapted preferably to maintain all eggs at temperatures between 100° and 105° Fahrenheit approximately and this improved system contemplates that fresh eggs will be placed in a horizontal plane, preferably by means of trays supported in horizontal planes, and after the eggs have been subject to the circulation of hot air for a predetermined time (the air circulating largely around the eggs) they will be placed in a tilted or inclined position in a different location but still subject to the same column of air and at this period of incubation they will be tilted in different planes at regular intervals during the time they remain in this latter position, and after they have remained for a predetermined time they will be again moved to a different position with reference to the forced circulation of hot air and so placed therein that the air will tend to keep the eggs below 105° temperature, and in this last named position the air will be forced to pass between the different eggs and will in effect act as a cooling medium for the eggs. The temperature of circulating air should be such as will prevent the eggs in the early stage of incubation from falling below 100° and the speed or velocity of the circulating air should be such as to carry the heat away from the eggs in the later stage of incubation and thereby hold the temperature of those eggs at 105° or slightly below that. It is manifest that the temperature will remain practically the same throughout the column of eggs, but the air is impelled with sufficient velocity to carry the heat away from the eggs which happen to be in the advanced stage of incubation.

In the accompanying drawings:

Figure 1 is a cross section of my improved incubator.

Fig. 2 is a perspective view of one of the egg trays with one end removed to more clearly disclose the open mesh bottom.

Fig. 3 is a vertical section of the incubator on line 3—3, Fig. 1.

Fig. 4 is a perspective view of a portion of one of the tilting racks for the trays.

The invention comprises a walled chamber 2 corresponding in size to that of an ordinary room, say approximately nine feet high, eight to ten feet wide, and of any desired length, and this chamber is subdivided longitudinally by two parallel rows of curtains 3 and 4 to provide a central compartment or corridor 5 and side compartments 6 and 7. Entrance to the corridor is gained by a door 8, and the compartments behind the curtains contain elevated stationary racks 9 which are within convenient reach of the attendant for introducing the fresh supply and from which elevated position the trays may be shifted at the proper time to a tier of tilting racks 10 on a lower plane and suspended therefrom by links 11. A series of stationary racks 12 are also arranged beneath the tilting racks 10, and all of said racks are of open construction and of the same size to permit interchange of the shallow trays 13 for the eggs to be hatched. These trays are provided with open mesh bottoms 14 upon which the smaller ends of the eggs rest in close and solid formation, and each tray of eggs occupies the upper rack 9 for the first three days, and is then transferred to a place in the upper end of the tilting rack 10. During the next fifteen days the trays in the tilting rack are shifted from higher to lower planes therein and tilted at frequent intervals to stand in oppositely-inclined positions. The tilting of the eggs is preferably arranged to put the eggs substantially on their sides. When the eggs in the lower-most trays in the tilting racks 10 are about ready to hatch each tray is transferred to the stationary rack 12 where the chicks may be removed as occasion requires.

Each tilting rack 10 comprises perpendicular corner bars 15 pivotally united by a series of cross bars 16 carrying connecting angle irons 17 extending from front to rear

at each side and upon which the trays are adapted to be slidably supported. The links 11 are pivotally connected at the center of the uppermost cross bars 16 of each tilting rack, thus permitting an entire series of trays to be placed in an inclined position by merely raising or lowering one side of the rack by hand engagement. The weight and friction and balance of the parts cause the trays to remain in any shifted position, whether horizontal or inclined. The fans or series of fans 18 mounted upon the hinged trap doors 19 forming the ceiling of the central corridor 5 constitute the means for forcing the hot air through the chamber and there are circular openings 20 provided in said doors within which the fans are arranged properly. The longitudinal space 21 above the fans has open communication above the side walls 22 with the upper ends of the rack compartments behind the curtains 3 and 4 and these curtains extend a sufficient distance, as indicated in Fig. 1, to cause the heated air distributed by the fans to pass downwardly through the central corridor to a point near the bottom of the chamber where it can pass into the space occupied by the trays. As explained later the trays near the bottom are preferably arranged so that the air is forced to pass between the eggs in each tray thereby cooling or holding the temperature of those eggs down. Thence the air passes into spaces above the lower series of trays until it reaches the distributing space 21 above the fan. Coils of heating pipe 23 are arranged in the space 21 to heat the air and more or less fresh air may be taken in through the valved opening 24 above the space 21 and this fresh supply of air may be charged with steam to a greater or less degree by means of a valve controlled [illegible] or pipe 26 see Fig. 2. The [illegible] for the release of foul air are made of such restricted capacity as to prevent the undue escape of moisture. It is possible to limit the openings and so control the [illegible] by means of the vitalizing effect of the [illegible] current upon the body of the air within the chamber. By lowering the hinged trap doors [illegible]

lower trays and as the danger is [illegible] temperature will rise in these [illegible] point injurious to incubation the [illegible] method disclosed herein permits the [illegible] lating air to act as a medium to prev[illegible] over heating at this stage of incubati[illegible] this is accomplished by promoting [illegible] duced draft within the lower tr[illegible]ys. obvious that the fans can be so arran[illegible] can be operated at such speed as t[illegible] the hot air to circulate fast enough t[illegible] the temperature throughout the cha[illegible] tween the limits of 100° and 105°.

It, therefore, appears that the i[illegible] apparatus and method contemplates [illegible] plication of hot air circulating in a [illegible] with such speed as to keep the temp[illegible] substantially uniform and so arrang[illegible] eggs that the fresh eggs are placed [illegible] point in the column of air and held [illegible] horizontal plane until they reach a [illegible] termined stage of incubation and th[illegible] at a different point in the same col[illegible] air and kept in planes inclined to the [illegible] zontal and thereafter placed at such a [illegible] in the column of air that the forced d[illegible] air acts to hold the eggs at a uniform [illegible] perature and to prevent them from b[illegible] ing overheated and thereafter placi[illegible] eggs into final position for the ha[illegible] operation.

Any suitable thermostatic means m[illegible] employed for regulating the temper[illegible] such for instance as a thermostat co[illegible] employed in incubators of a well k[illegible] construction and illustrated in Lette[illegible] ent No. 1,111,138, dated September [illegible] 1914, which thermostat may be suitabl[illegible] nected to the valve controlling the s[illegible] hot water, as the case may be, which [illegible] through the pipes 23.

Having thus described my inven[illegible] claim:—

1. The method of hatching a plur[illegible] eggs by arranging them at different l[illegible] a closed chamber having restricted e[illegible] of sufficient capacity for the escape [illegible] air without undue loss of moisture [illegible] plying a current of heated air, said [illegible] being created by means other than [illegible] [illegible] of temperature and of sufficient [illegible] to circulate, diffuse and main[illegible] air throughout the chamber at [illegible]

[illegible] position, whether horizontal or inclined. The fans or series of fans 18 mounted upon the hinged trap doors 19 forming the ceiling of the central corridor 5 constitute the means for forcing the hot air through the chamber and there are circular openings 20 provided in said doors within which the fans are arranged properly. The longitudinal space 21 above the fans has open communication above the side walls 22 with the upper ends of the rack compartments behind the curtains 3 and 4 and these curtains extend a sufficient distance, as indicated in Fig. 1, to cause the heated air distributed by the fans to pass downwardly through the central corridor to a point near the bottom of the chamber where it can pass into the space occupied by the trays. As explained later the trays near the bottom are preferably arranged so that the air is forced to pass between the eggs in each tray thereby cooling or holding the temperature of those eggs down. Thence the air passes into spaces above the lower series of trays until it reaches the distributing space 21 above the fan. Coils of heating pipe 23 are arranged in the space 21 to heat the air and more or less fresh air may be taken in through the valved opening 24 above the space 21 and this fresh supply of air may be charged with steam to a greater or less degree by means of a valve controlled jet or pipe 26 see Fig. 3. The outlets 28 for the release of foul air are made of such restricted capacity as to prevent the undue escape of moisture. It is possible to limit the openings and so conserve the moisture by reason of the vitalizing effect of the power driven current upon the body of the air within the chamber. By lowering the hinged trap doors, the motor and fan are also easily reached for inspection, etc.

In Fig. 3 only a single-curtain 3 is shown in place, the curtain or curtains at the right being entirely removed to disclose the racks and trays in full lines, and it will be also noted that the vertical spaces 27 between the adjacent tilting racks 10 are closed at their lower ends by flexible strips of fabric which are attached to and extend upward at each side of each rack so as to compel the air to circulate through the mesh bottom and around and about each egg as heretofore referred to, and as the eggs further advanced in incubation are contained in these

can be operated at such speed [illegible] the hot air to circulate fast enough [illegible] the temperature throughout the cham[illegible] tween the limits of 100° and 105°.

It, therefore, appears that the i[illegible] apparatus and method contemplates [illegible] plication of hot air circulating in a [illegible] with such speed as to keep the temp[illegible] substantially uniform and so arrang[illegible] eggs that the fresh eggs are placed [illegible] point in the column of air and held [illegible] horizontal plane until they reach a [illegible] termined stage of incubation and the[illegible] at a different point in the same colu[illegible] air and kept in planes inclined to the [illegible] zontal and thereafter placed at such a [illegible] in the column of air that the forced dr[illegible] air acts to hold the eggs at a uniform [illegible] perature and to prevent them from b[illegible] ing overheated and thereafter placing [illegible] eggs into final position for the hat[illegible] operation.

Any suitable thermostatic means may [illegible] employed for regulating the temper[illegible] such for instance as a thermostat com[illegible] employed in incubators of a well-kn[illegible] construction and illustrated in Letters-P[illegible] ent No. 1,111,138, dated September [illegible] 1914, which thermostat may be suitably [illegible] nected to the valve controlling the steam [illegible] hot water, as the case may be, which pass[illegible] through the pipes 23.

Having thus described my invention, I claim:—

1. The method of hatching a plurality of eggs by arranging them at different levels in a closed chamber having restricted openings of sufficient capacity for the escape of foul air without undue loss of moisture and applying a current of heated air, said current being created by means other than variations of temperature and of sufficient velocity to circulate, diffuse and maintain the air throughout the chamber at substantially the same temperature, whereby the air will be vitalized, the moisture conserved and the units of heat will be carried from the eggs in the more advanced stage of incubation to those in a less advanced stage for the purpose specified.

2. The method of hatching a plurality of eggs by arranging them at different levels in a closed chamber having restricted openings of sufficient capacity for the escape of foul air without undue loss of moisture and applying a power driven current of heated

lower trays and as the danger is that the temperature will rise in these eggs to a point injurious to incubation the improved method disclosed herein permits the circulating air to act as a medium to prevent the over heating at this stage of incubation and this is accomplished by promoting an induced draft within the lower trays. It is obvious that the fans can be so arranged and can be operated at such speed as to cause the hot air to circulate fast enough to keep the temperature throughout the chamber between the limits of 100° and 105°.

It, therefore, appears that the improved apparatus and method contemplates the application of hot air circulating in a column with such speed as to keep the temperature substantially uniform and so arranging the eggs that the fresh eggs are placed at one point in the column of air and held in a horizontal plane until they reach a predetermined stage of incubation and then put at a different point in the same column of air and kept in planes inclined to the horizontal and thereafter placed at such a point in the column of air that the forced draft of air acts to hold the eggs at a uniform temperature and to prevent them from becoming overheated and thereafter placing the eggs into final position for the hatching operation.

Any suitable thermostatic means may be employed for regulating the temperature, such for instance as a thermostat commonly employed in incubators of a well-known construction and illustrated in Letters-Patent No. 1,111,188, dated September 22nd, 1914, which thermostat may be suitably connected to the valve controlling the steam or hot water, as the case may be, which passes through the pipes 23.

Having thus described my invention, I claim:—

1. The method of hatching a plurality of eggs by arranging them at different levels in a closed chamber having restricted openings of sufficient capacity for the escape of foul air without undue loss of moisture and applying a current of heated air, said current being created by means other than ver-



air in an adjacent chamber through openings into the egg chamber, said current being at sufficient velocity to circulate, diffuse and maintain the air throughout the egg chamber at substantially the same temperature, whereby the air will be vitalized, the moisture conserved and the units of heat will be carried from the eggs in the more advanced stage of incubation to those in a less advanced stage for the purpose specified.

3. The method of hatching a plurality of eggs by arranging them at different levels in a closed chamber having restricted openings of sufficient capacity for the escape of foul air without undue loss of moisture and applying a vertically directed current of heated air in an adjacent chamber to circulate in said egg chamber through upper and lower openings between said chambers, said current being created by mechanically moving means of such velocity as to diffuse and maintain the air throughout the egg chamber at substantially the same temperature whereby the air will be vitalized, the moisture conserved and the units of heat will be carried from the eggs in the more advanced stage of incubation to those in the less advanced stage for the purpose specified.

4. In an incubator, a closed chamber having a central corridor provided with an air-distributing space in its upper portion and a power-driven fan in said space, curtains at each side of said corridor, arranged to permit the air to circulate from the bottom of the chamber into the part of the chamber behind the curtains, passageways connecting the air distributing space with the corridor and the parts of said chamber behind the curtains, separate stationary and tilting racks behind said curtains, egg-trays having open-mesh bottoms removably mounted upon said racks, and means to heat the air circulated through said chamber.

5. In an incubator, a closed chamber with a vertically disposed partition to provide a corridor having upper and lower passage ways to said chamber, egg trays arranged at different levels in said chamber, a power driven fan creating a current in said corridor to circulate through said passage ways and egg trays, said chamber having restricted openings of sufficient capacity for the discharge of foul air without undue loss of moisture and means to heat the air circulated through said chamber.

In testimony whereof, I have hereunto set my hand this 20th day of October, 1916.

SAMUEL B. SMITH.

Witnesses:

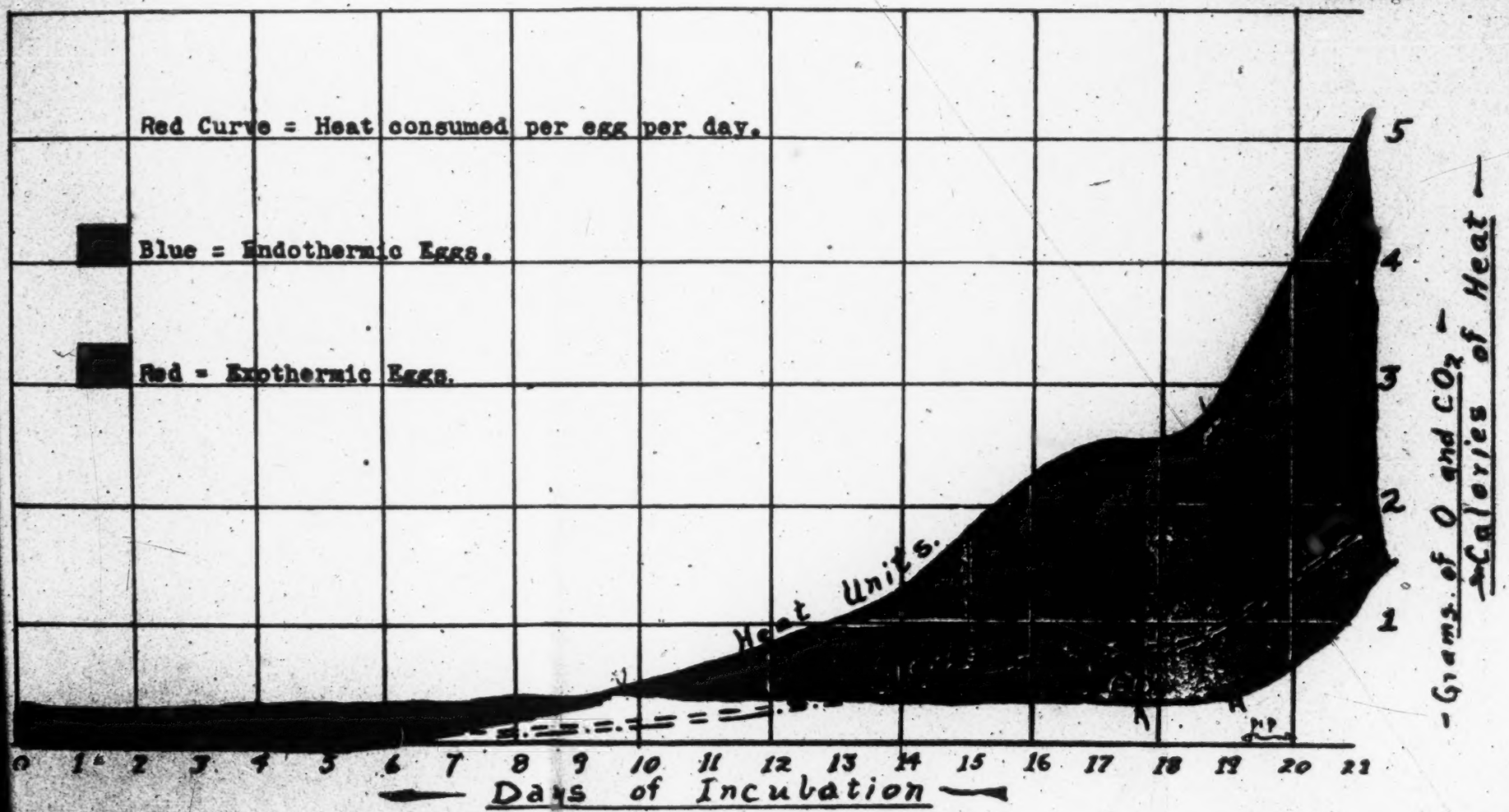
HANNAH D. PLAIN,

IDA M. SMITH.

956

PLAINTIFF'S EXHIBIT No. 3.

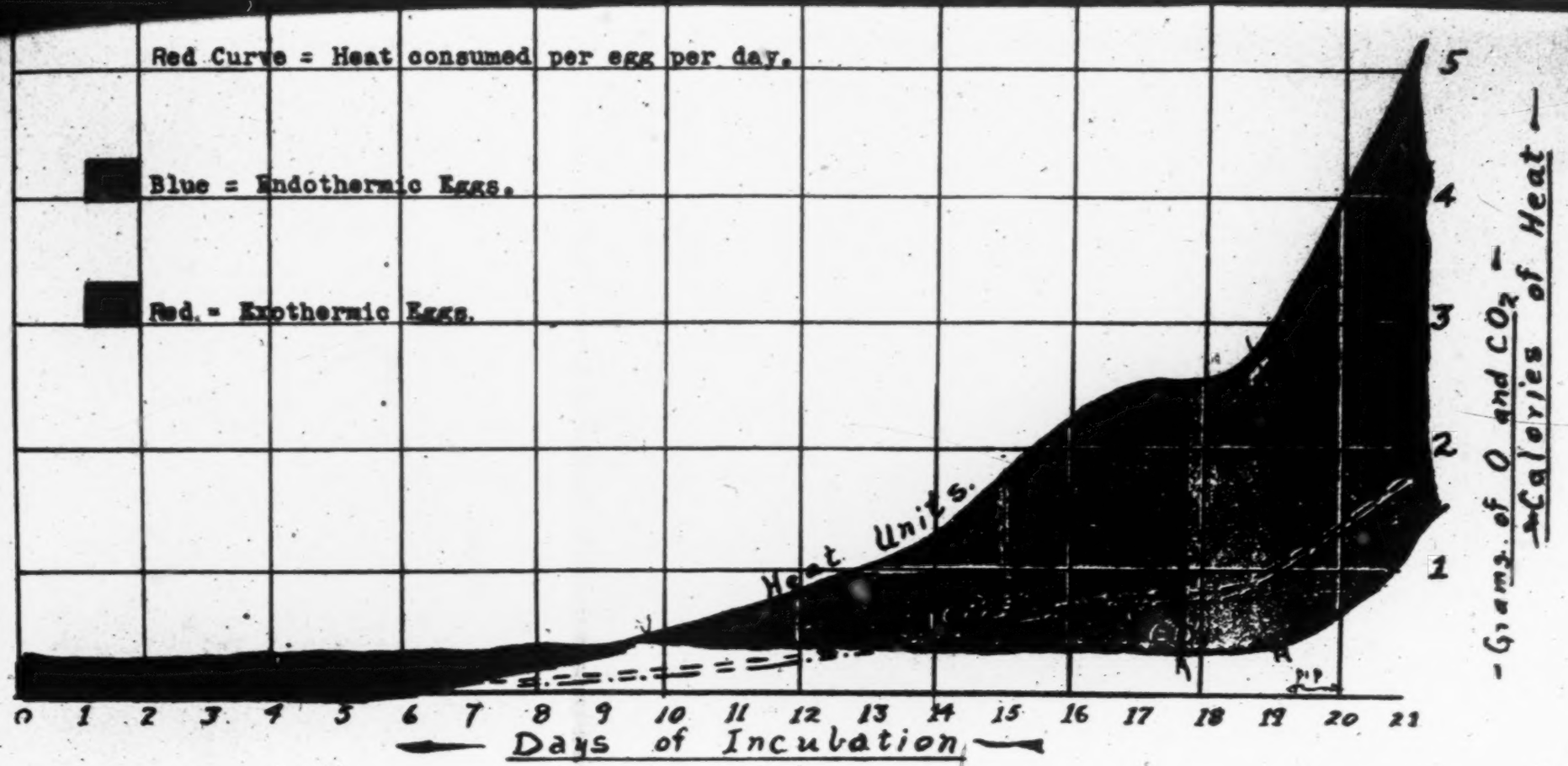
TAGGART HEAT GRAPH




GRAPH SHOWING DEVELOPMENT OF HEAT UNITS DURING INCUBATION.

EXT. 18 21 28

The above graph shows the heat development within an in- during the 21 days of incubation. The heavy of egg per day. then and the time of hatching. There has been several explanations why the embryo apparently stands still during the 18th day. Probably the best explanation is




GRAPH SHOWING DEVELOPMENT OF HEAT UNITS DURING INCUBATION. J.I.T. '18 '21 '28

The above graph shows the heat development within an incubating egg during the 21 days of incubation. The heavy curve indicates heat units given off per egg per day. [illegible] one B.T.U. [illegible] indicates the amount of oxygen consumed. The [illegible] curve shows the carbon-dioxide given off. The oxygen and carbon-dioxide are shown in grams per egg per day.

During the first four days no heat is given off by the egg. Tests indicate that some heat is absorbed during this period. From the fourth day heat is given off by the egg, which steadily increases with the exception of the 18th day. On this day the heat given off, and the oxygen consumed, hold steadily about as at the close of the 17th day. On the 19th day the increasing development of heat is resumed in earnest, and doubles between then and the time of hatching. There has been several explanations why the embryo apparently stands still during the 18th day. Probably the best explanation is that during the first 17 days the chick has been living off of the white of the egg while on the 18th day it begins to assimilate the yolk. This changing food diet probably causes readjustment which temporarily checks development.

The above graphs are the result of studies with calorimeters. The egg is placed within a calorimeter that is maintained at a constant temperature. Proper allowance is made for all heat radiated, and the heat generated within the egg can be measured. At the same time accurate check is kept on all air that passes in and out of the calorimeter, measuring the oxygen consumed and the carbon-dioxide given off. J. I. T. 3/22/30.

PLAINTIFF'S EXHIBIT No. 4 A

# CHART SHOWING HEAT DEVELOPED BY INCUBATING EGGS

| Number of days eggs were in incubator when tests were started | DURATION OF TIME IN HOURS AFTER SEALING BOXES | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | ½ | 1 | 1½ | 2 | 2½ | 3 | 3½ | 4 | 4½ | 5 | 5½ | 6 | 6½ | 7 | 7½ | 8 | 8½ | 9 |
| 3 DAYS | 98.1 | 98.2 | 98.2 | 98.2 | 98.2 | 98.2 | 98.2 | 98.2 | 98.2 | 98.2 | 98.2 | 98.2 | 98.2 | 98.2 | 98.2 | 98.2 | 98.2 | 98.2 |
| 6 " | 98.0 | 98.0 | 98.0 | 98.0 | 98.0 | 98.0 | 98.1 | 98.1 | 98.1 | 98.1 | 98.1 | 98.1 | 98.1 | 98.1 | 98.1 | 98.1 | 98.1 | 98.1 |
| 9 " | 98.4 | 98.4 | 98.4 | 98.4 | 98.4 | 98.4 | 98.4 | 98.4 | 98.4 | 98.4 | 98.4 | 98.4 | 98.4 | 98.4 | 98.4 | 98.4 | 98.4 | 98.5 |
| 10 " | 98.3 | 98.4 | 98.4 | 98.4 | 98.5 | 98.6 | 98.7 | 98.7 | 98.8 | 98.9 | 98.9 | 98.9 | 98.9 | 99.0 | 99.0 | 99.1 | 99.1 | 99.1 |
| 11 " | 98.7 | 98.7 | 98.7 | 98.7 | 98.8 | 98.8 | 98.8 | 98.9 | 98.9 | 98.9 | 98.9 | 99.0 | 99.0 | 99.0 | 99.0 | 99.1 | 99.1 | 99.2 |
| 12 " | 98.8 | 98.9 | 99.1 | 99.3 | 99.4 | 99.6 | 99.7 | 99.8 | 99.8 | 99.9 | 100.0 | 100.0 | 100.1 | 100.2 | 100.2 | 100.3 | 100.4 | 100.4 |
| 13 " | 99.0 | 99.1 | 99.2 | 99.3 | 99.6 | 99.8 | 99.9 | 100.1 | 100.3 | 100.5 | 100.6 | 100.8 | 100.9 | 101.0 | 101.0 | 101.3 | 101.6 | 101.6 |
| 14 " | 100.0 | 100.8 | 101.3 | 101.6 | 102.0 | 102.2 | 102.4 | 102.6 | 102.8 | 103.0 | 103.1 | 103.2 | 103.3 | 103.5 | 103.8 | 104.1 | 104.2 | 104.3 |
| 15 " | 100.0 | 100.6 | 101.0 | 101.5 | 101.9 | 102.0 | 102.3 | 102.5 | 102.7 | 102.8 | 102.9 | 103.1 | 103.2 | 103.3 | 103.4 | 103.4 | 103.5 | 103.6 |
| 16 " | 100.1 | 100.7 | 101.6 | 102.2 | 102.8 | 103.2 | 103.4 | 103.6 | 103.7 | 104.0 | 104.3 | 104.5 | 104.7 | 104.8 | 105.0 | 105.2 | 105.2 | 105.3 |
| 17 " | 101.0 | 102.2 | 103.0 | 103.4 | 103.7 | 104.2 | 104.4 | 104.8 | 105.1 | 105.4 | 105.6 | 105.7 | 105.9 | 106.2 | 106.5 | 107.0 | 107.1 | 107.3 |
| 18 " | 100.6 | 101.3 | 101.9 | 102.4 | 102.9 | 103.0 | 103.2 | 103.3 | 103.6 | 103.7 | 103.8 | 103.9 | 104.1 | 104.2 | 104.4 | 104.5 | 104.6 | 104.6 |
| 19 " | 100.5 | 101.3 | 102.1 | 102.5 | 102.9 | 103.2 | 103.4 | 103.5 | 103.6 | 103.6 | 103.7 | 103.7 | 103.8 | 103.8 | 103.9 | 104.0 | 104.2 | 104.3 |
| 20 " | 100.8 | 102.2 | 103.2 | 104.3 | 104.5 | 104.5 | 104.5 | 104.5 | 104.9 | 105.4 | 106.0 | 106.1 | 106.3 | 106.5 | 107.6 | 107.8 | 107.9 | 108.1 |
| 21 " eggs near hatching | 101.5 | 102.6 | 103.6 | 104.5 | 105.1 | 105.9 | 106.5 | 106.9 | 107.2 | 107.6 | 107.6 | 107.6 | 107.6 | 107.6 | 107.6 | 107.6 | 107.6 | 107.6 |
| 21 " eggs pipped | 102.6 | 104.3 | 104.7 | 105.6 | 107.0 | 107.5 | 108.2 | 108.6 | 108.6 | 108.7 | 108.8 | 108.9 | 109.0 | 109.0 | 109.0 | 109.0 | 109.0 | 109.0 |

TEMPERATURE OF INCUBATOR AT TIME OF TEST - 99°

When a fertile egg is placed in proper environment, the life germ within the egg grows and develops into a baby chick. For the egg of the common fowl, this process takes approximately twenty-one days. During this development practically all of the original egg, with the exception of the shell and some of the water content, is utilized as food. The growing organism also takes in oxygen and gives off carbon dioxide. This assimilation of food and oxygen produces heat just as is the natural result in any growing animal. Eggs under incubation, therefore, will produce heat and the temperature of the eggs in different stages of incubation will vary even though the temperature of the incubator air is kept constant. Among other things, this variation is influenced by the period of incubation, the humidity, the velocity of the air movement, and the texture of the shell.

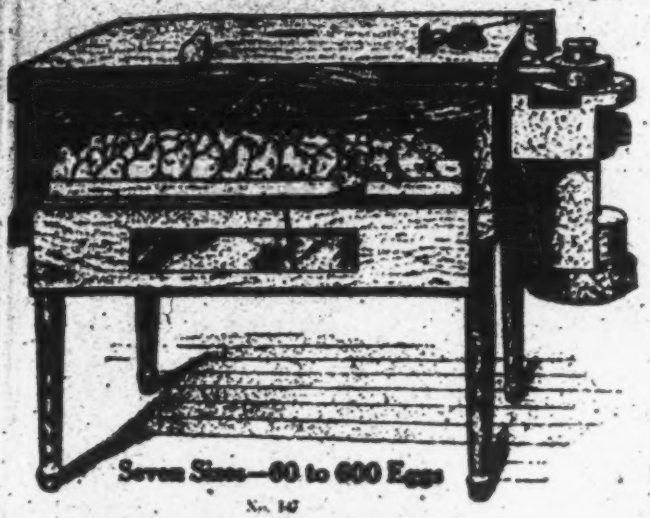
The tests recorded here shows this heat development at different stages of incubation. The incubator was operated in its normal way, filled with eggs, with a temperature of 99° and with the wet bulb reading varying from 85° to 90°, depending upon the day the tests were made. In making these tests, well insulated boxes such as shown in the attached photograph, were placed in the incubator for at least twelve hours before the tests were started, to make sure the boxes assumed the temperature of the air. Twelve fertile eggs of a known stage of incubation were then placed in each box, the lids tightly closed and sealed. A tested clinical thermometer [illegible] through the side of the box, as shown in the photograph, the bulb being completely within the box, but so placed that the temperature of the interior could be read from without. In each case, the thermometer was cooled to 90° or below before it was inserted in the box. The sealed box of eggs was then placed on the floor of the incubator and the readings of the thermometer were recorded at intervals of thirty minutes during the nine hours immediately following. If the eggs within the box developed an appreciable amount of heat, the temperature rose according to the heat development.

The data recorded here shows that for the first ten days of incubation the eggs are cooler than the surrounding air. This is true even if the eggs are developing some animal heat. The reason lies in the cooling effect of the evaporation of water. During incubation eggs lose about one-sixth(1/6) of their weight by evaporation, and this tends to cool them. The data shows that the heat developed by the growing embryo does not completely offset the cooling effect of the evaporating water until about the tenth day. From that time on, the animal heat can be easily recorded.

The data here recorded is a summary of tests conducted at Cleveland, Ohio during the Spring of 1933. A Smith Junior Incubator, full of eggs, was operated in its normal manner. Eggs from widely different flocks and breeds were used.

J.I.T., 9-1-33.

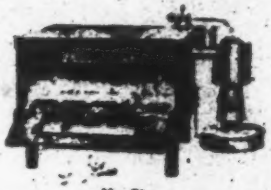
# Electrotypes for Newspaper Use



Seven Sizes—60 to 600 Eggs

No. 147

No. 149



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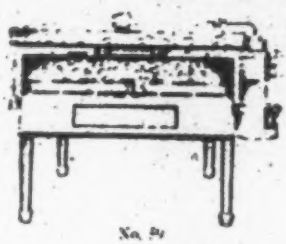

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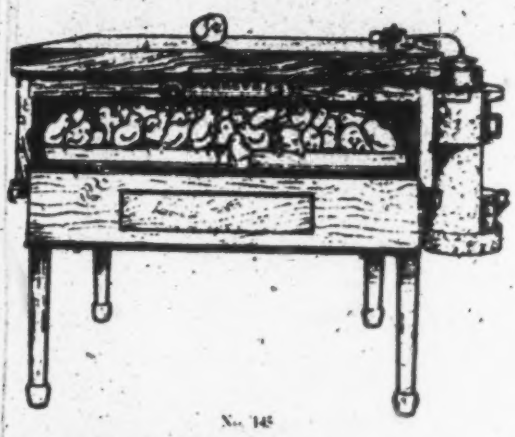

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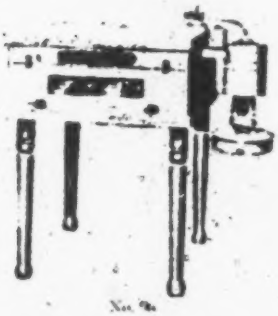
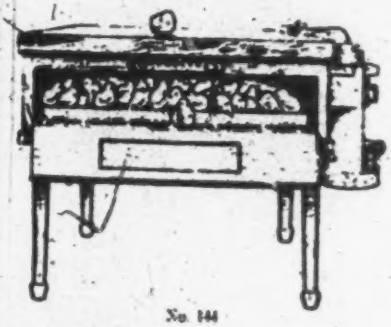


No. 9a



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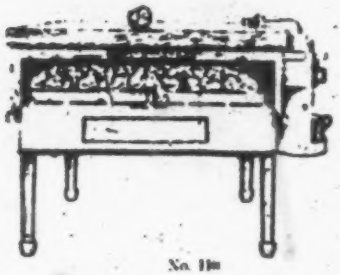
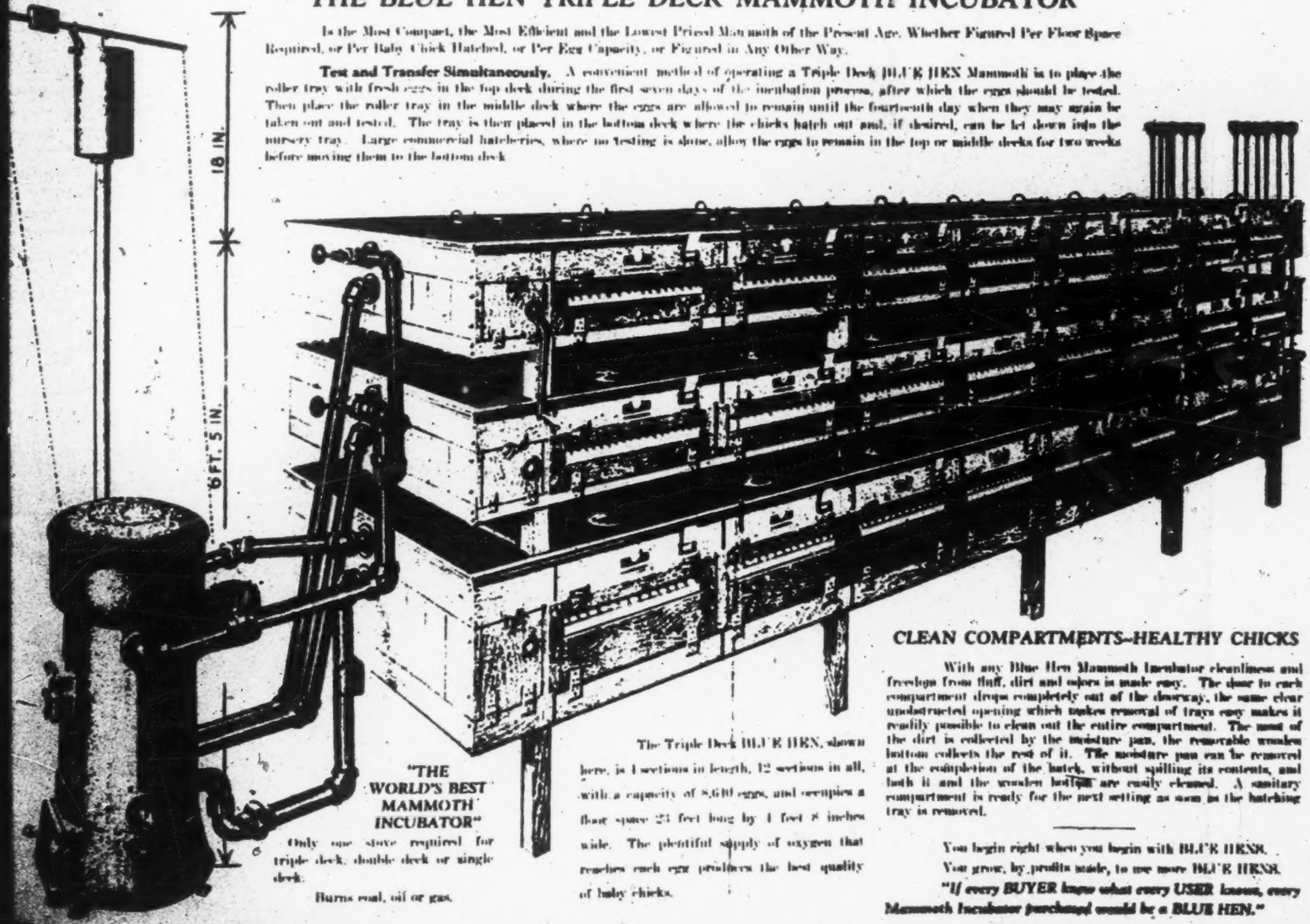


No. 19a

# THE BLUE HEN TRIPLE DECK MAMMOTH INCUBATOR

Is the Most Compact, the Most Efficient and the Lowest Priced Mammoth of the Present Age, Whether Figured Per Floor Space Required, or Per Baby Chick Hatched, or Per Egg Capacity, or Figured in Any Other Way.

**Test and Transfer Simultaneously.** A convenient method of operating a Triple Deck BLUE HEN Mammoth is to place the roller tray with fresh eggs in the top deck during the first seven days of the incubation process, after which the eggs should be tested. Then place the roller tray in the middle deck where the eggs are allowed to remain until the fourteenth day when they may again be taken out and tested. The tray is then placed in the bottom deck where the chicks hatch out and, if desired, can be let down into the nursery tray. Large commercial hatcheries, where no testing is done, allow the eggs to remain in the top or middle decks for two weeks before moving them to the bottom deck




**"THE WORLD'S BEST MAMMOTH INCUBATOR"**

Only one stove required for triple deck, double deck or single deck.

Burns coal, oil or gas.

The Triple Deck BLUE HEN, shown here, is 4 sections in length, 12 sections in all, with a capacity of 8,640 eggs, and occupies a floor space 23 feet long by 4 feet 8 inches wide. The plentiful supply of oxygen that reaches each egg produces the best quality of baby chicks.

## CLEAN COMPARTMENTS--HEALTHY CHICKS

With any Blue Hen Mammoth Incubator cleanliness and freedom from fluff, dirt and odors is made easy. The door to each compartment drops completely out of the doorway, the same clear unobstructed opening which makes removal of trays easy makes it readily possible to clean out the entire compartment. The most of the dirt is collected by the moisture pan, the removable wooden bottom collects the rest of it. The moisture pan can be removed at the completion of the hatch, without spilling its contents, and both it and the wooden bottom are easily cleaned. A sanitary compartment is ready for the next setting as soon as the hatching tray is removed.

---

You begin right when you begin with BLUE HENS.

You grow, by profits made, to use more BLUE HENS.

***"If every BUYER knew what every USER knows, every Mammoth Incubator purchased would be a BLUE HEN."***

## ASK YOURSELF THESE QUESTIONS

Before Buying Any Incubator, or In Any Incubator Yourself Now Owned, Can I Have a Visit of Mid-winter.

**If You Buy A BLUE HEN**

**If You Buy A BLUE HEN Double Or Triple Deck You Have Only One Stove, Perfectly Regulated**

**If You Own A BLUE HEN**

**BLUE HEN Styles Never Change Because The BLUE HEN Principle Of Incubation Has Been Proved Right**

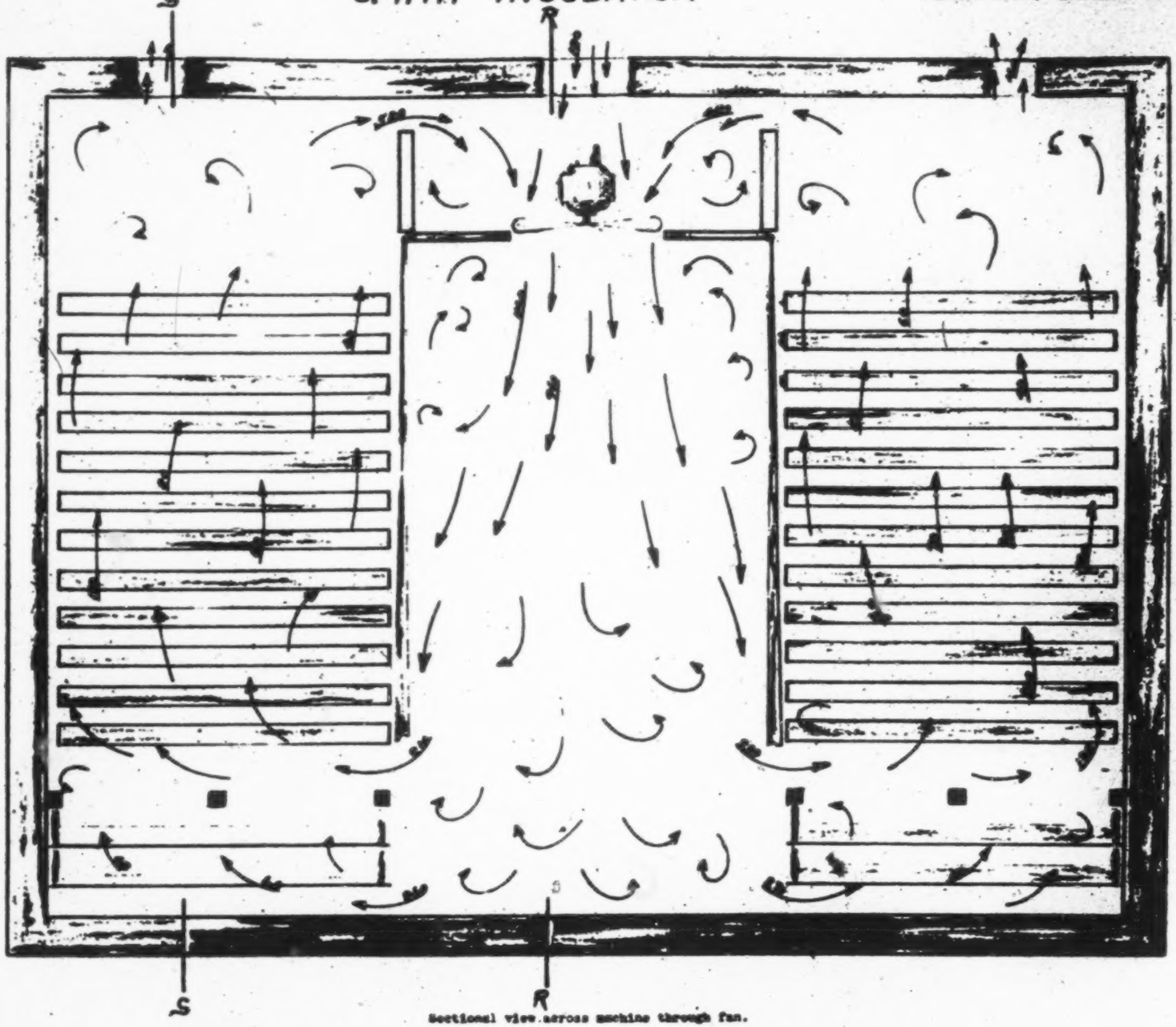
**Buy A BLUE HEN**

**The First BLUE HEN Manufactured Is Still In Use — And Will Last Indefinitely Against Natural Wear And Use**

**Buy The BLUE HEN For Success**

# SMITH INCUBATOR

960
PLAINTIFF'S EXHIBIT No. 11 A




Sectional view across machine through fan.

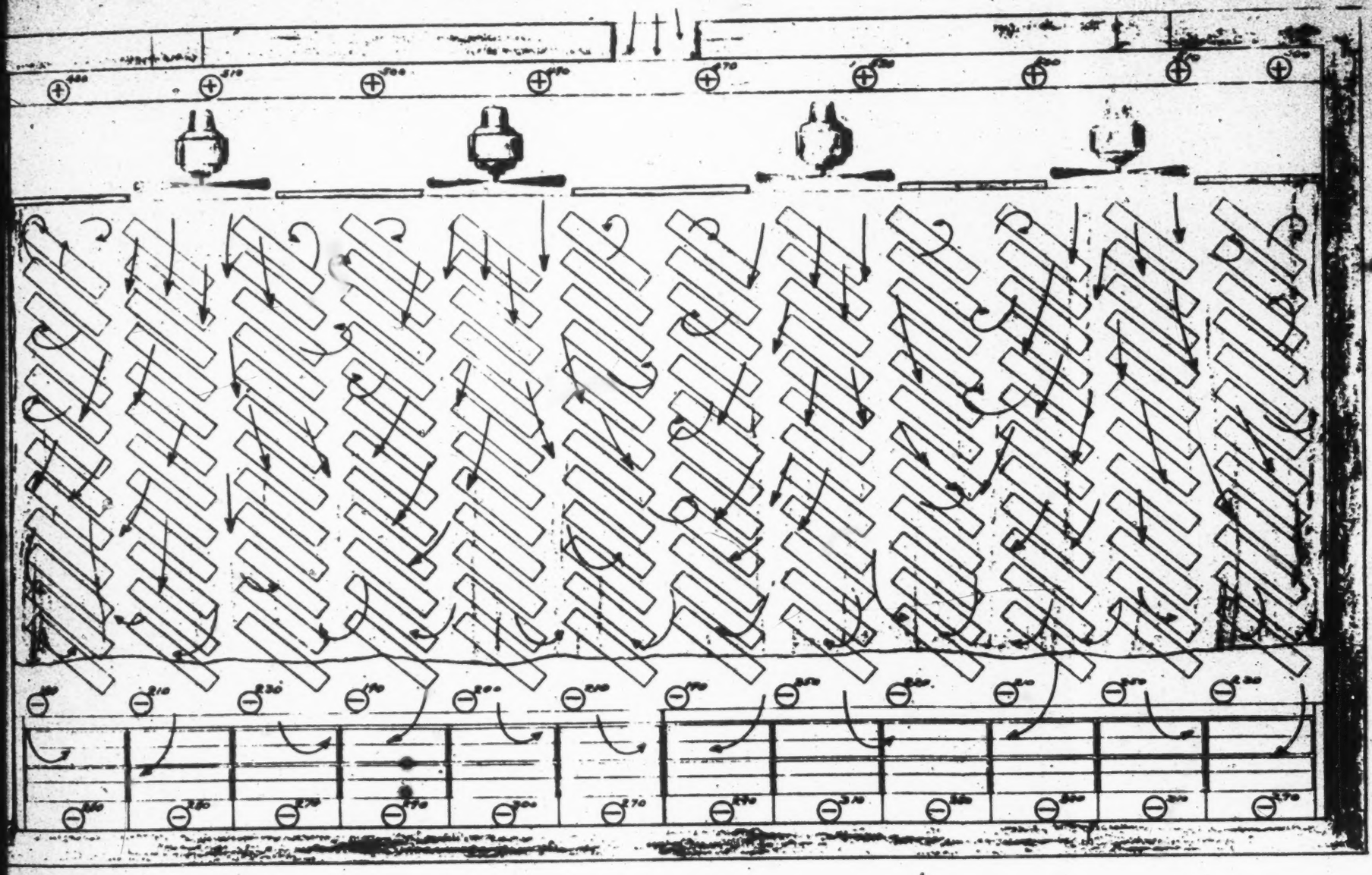
Arrows show general direction of air currents. Numbers give approximate speed of currents as recorded by anemometer (Biram).

Readings in lower two trays were taken with anemometers in the trays.

Air which passes from corridor under lower two trays goes through the trays to space above. In upper twelve trays a very small per cent of the air which has come from the corridor passes through the tray. The large portion of it goes up the air columns between the trays.

# SMITH INCUBATOR

PLAINTIFF'S EXHIBIT No. 11 B



Diagrammatic sectional view along corridor.

⊕ 100 — Shows position of anemometer, direction of air flow, and approximate speed of air currents.

⊖ — Air flowing away from fan.

⊕ — Air flowing to the fan.

Shaded portion covering upper twelve trays represents curtain in operating position.

Arrows show general direction of air currents in corridor. Approximate speed of these arrows as recorded by anemometer is given in "Sectional view across machine through fan".

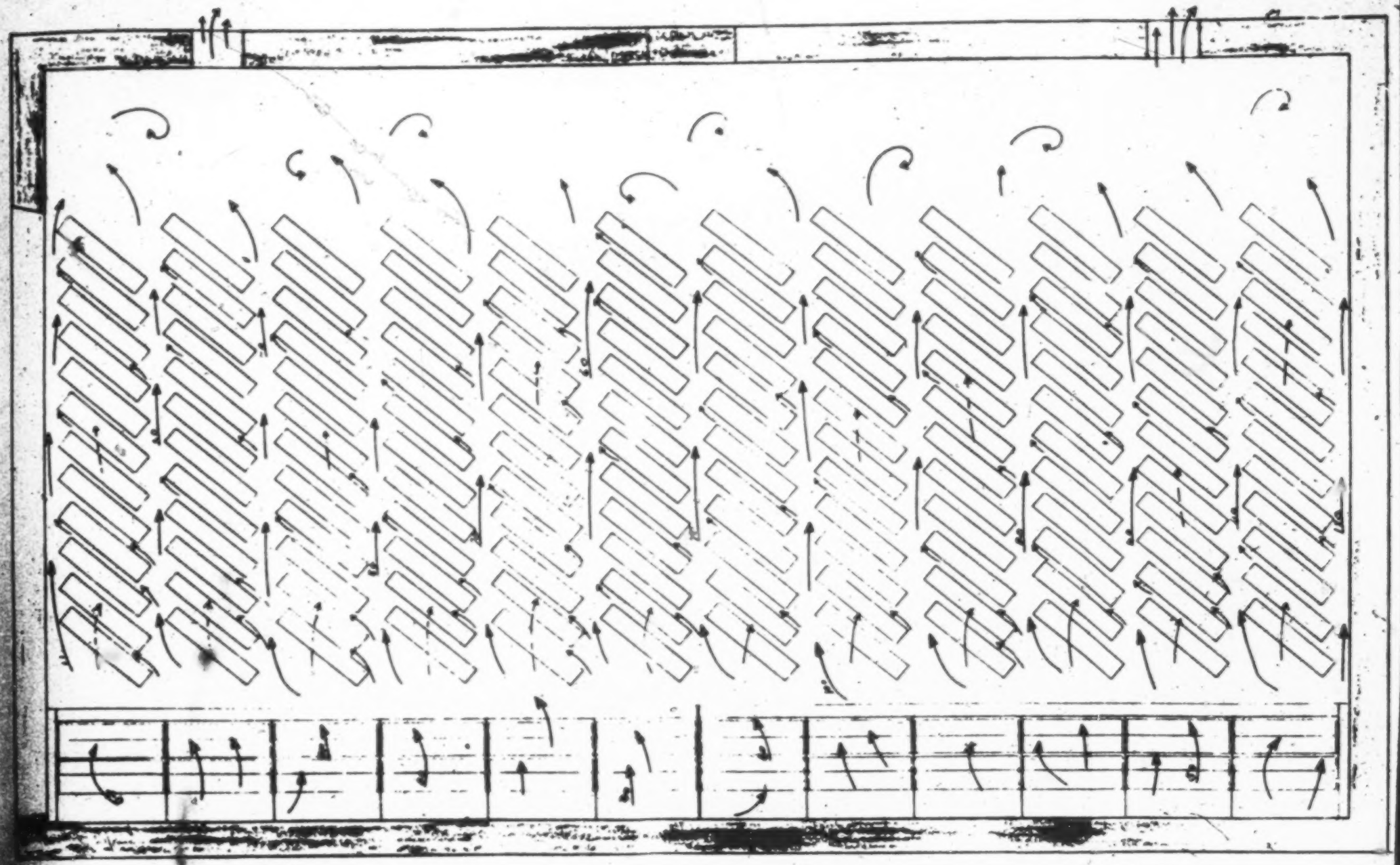
Fans were rotating 1600 to 1650 R. P. M.

RR

962

PLAINTIFF'S EXHIBIT No. 11 C

# SMITH INCUBATOR

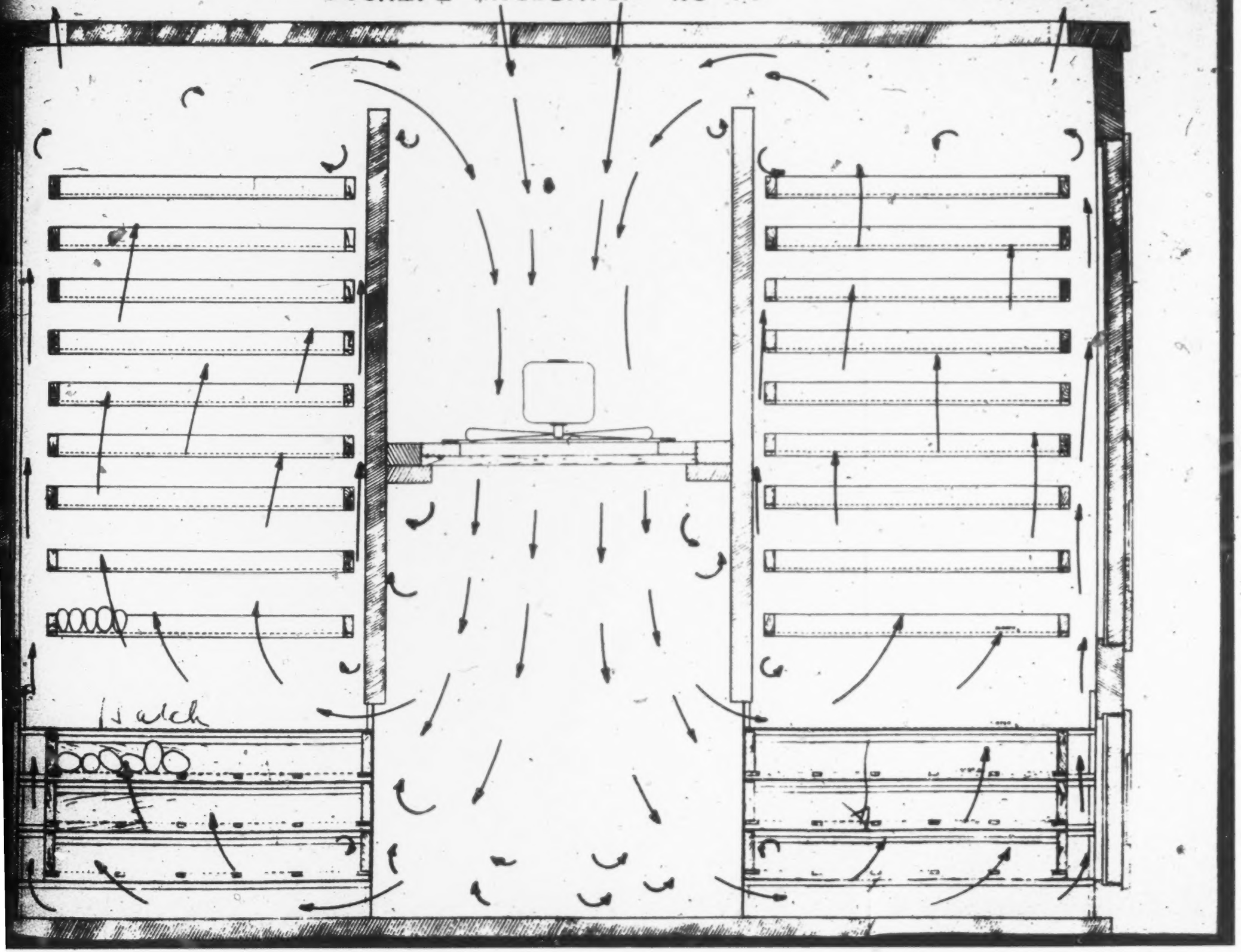


Sectional view in plane parallel to corridor and midway between front and rear of trays.

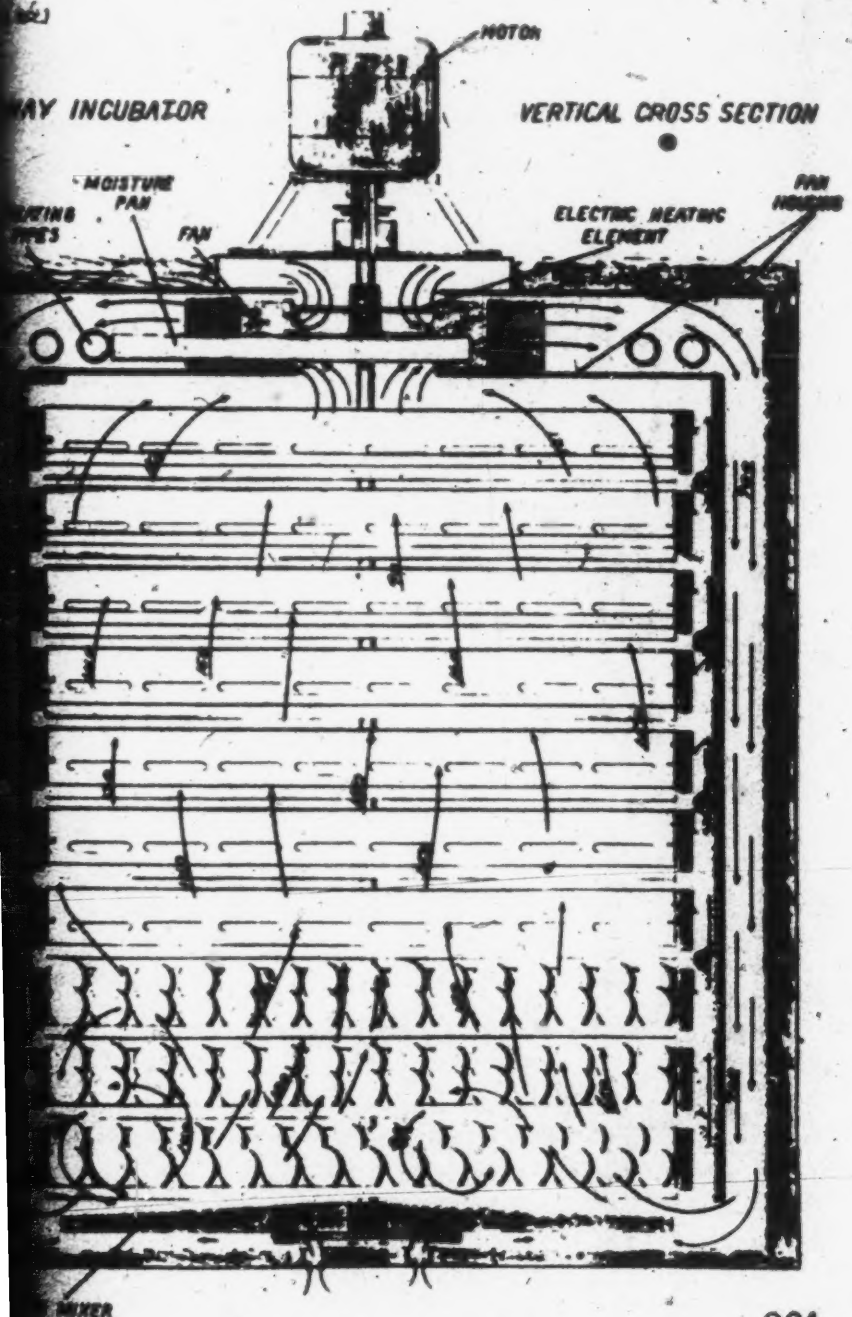
Arrows show general direction of air currents.

Numbers give approximate speed of air currents as recorded by anemometer.(Biram). Air which passes from corridor under lower two trays goes through the trays to space above. In upper twelve trays a very small per cent of the air which has come from the corridor passes through the tray. The large portion of it goes up the air columns between the trays.

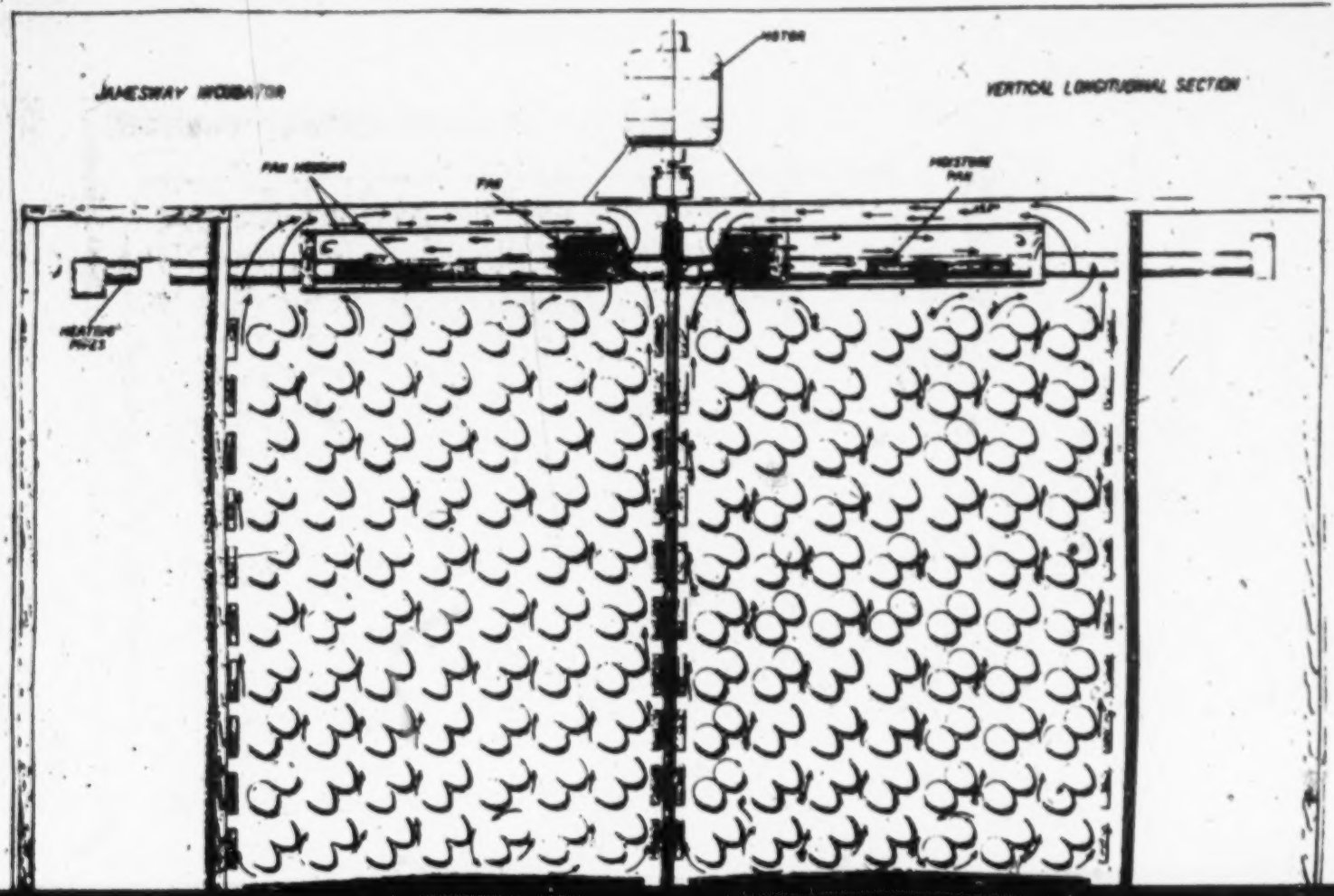
# BUCKEYE INCUBATOR NO 48



PLAINTIFF'S EXHIBIT No. 14




964




PLAINTIFF'S EXHIBIT No. 15

PLAINTIFF'S EXHIBIT No. 24

686

Exh 24 (10 sheets marked 1, 2, 3, 4, 5, 6, 7, 8, 9, 10)

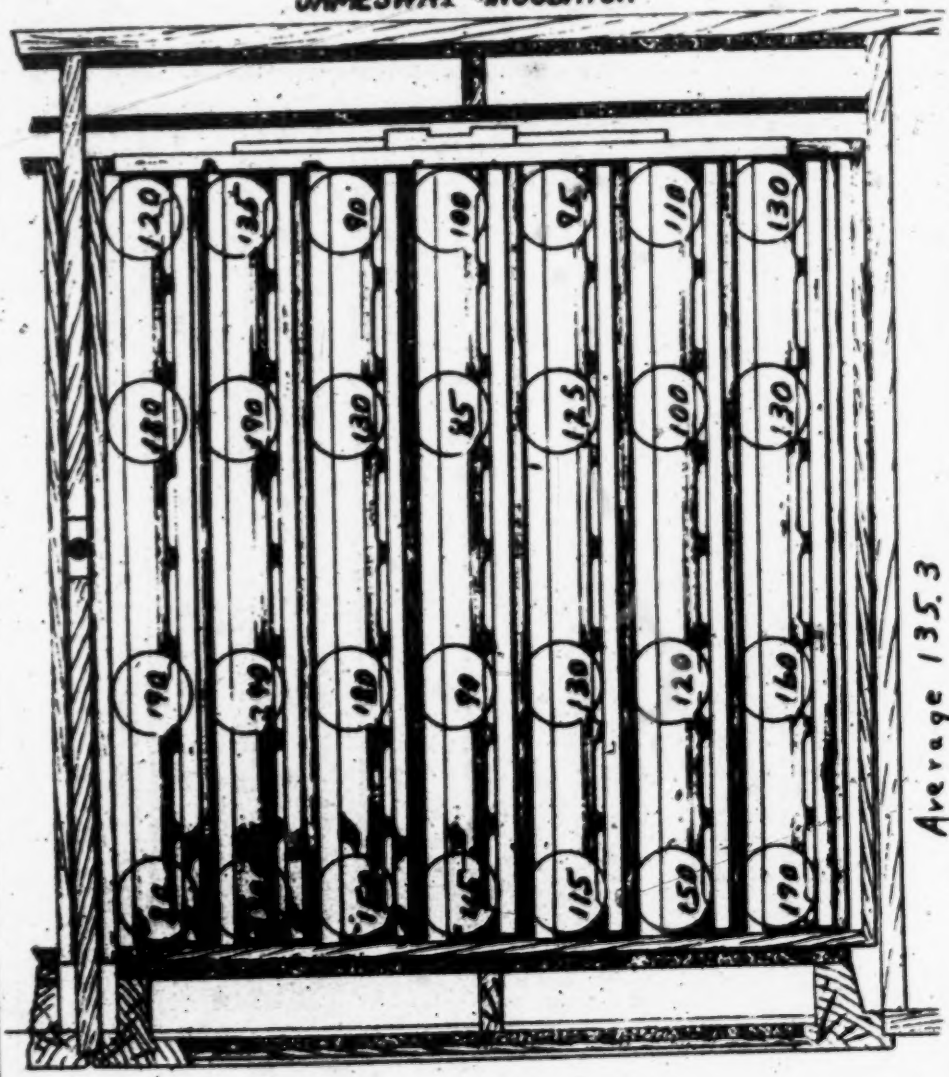
JAMESWAY INCUBATOR




966

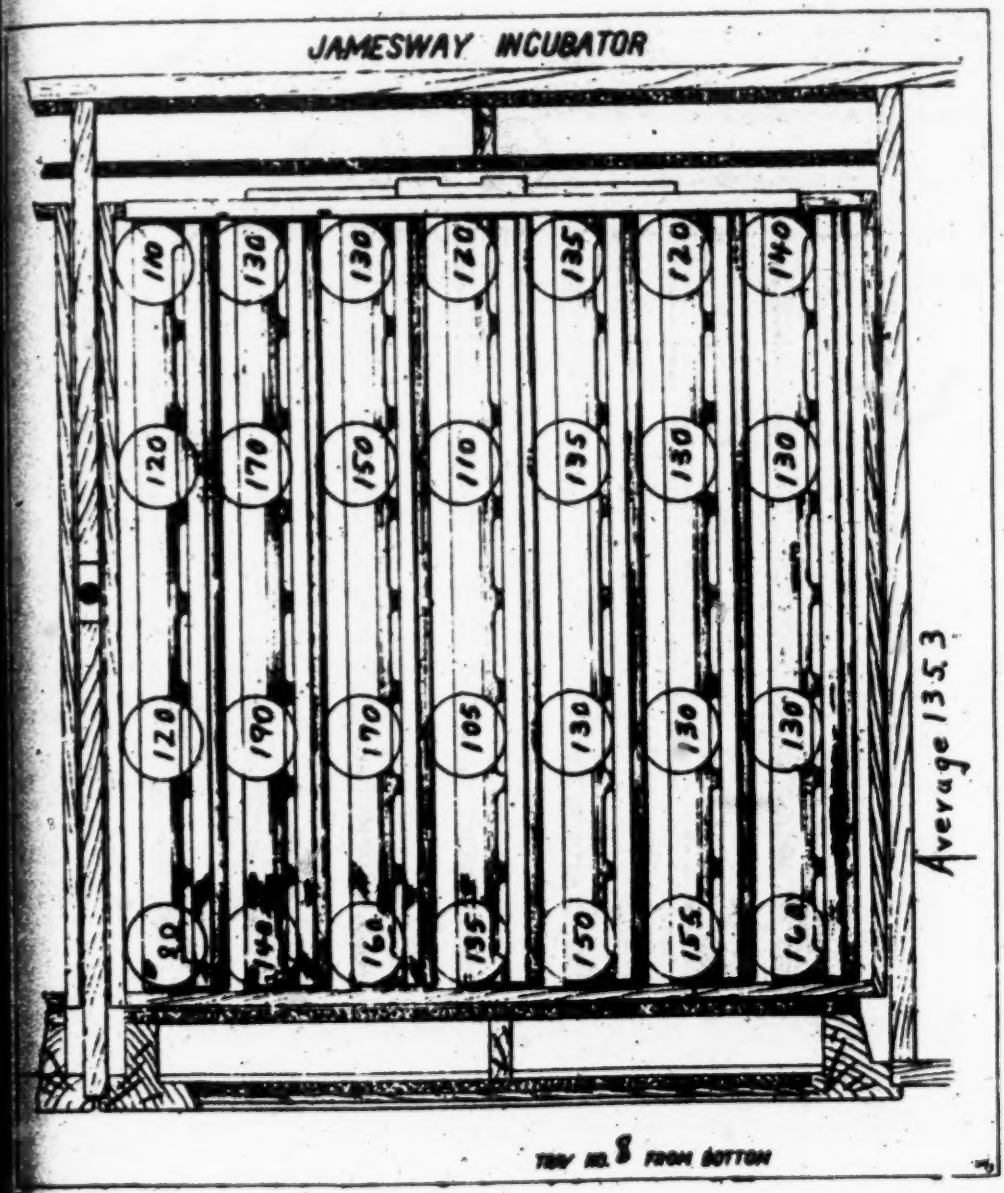
687

JAMESWAY INCUBATOR




TRAY NO. 9 FROM BOTTOM

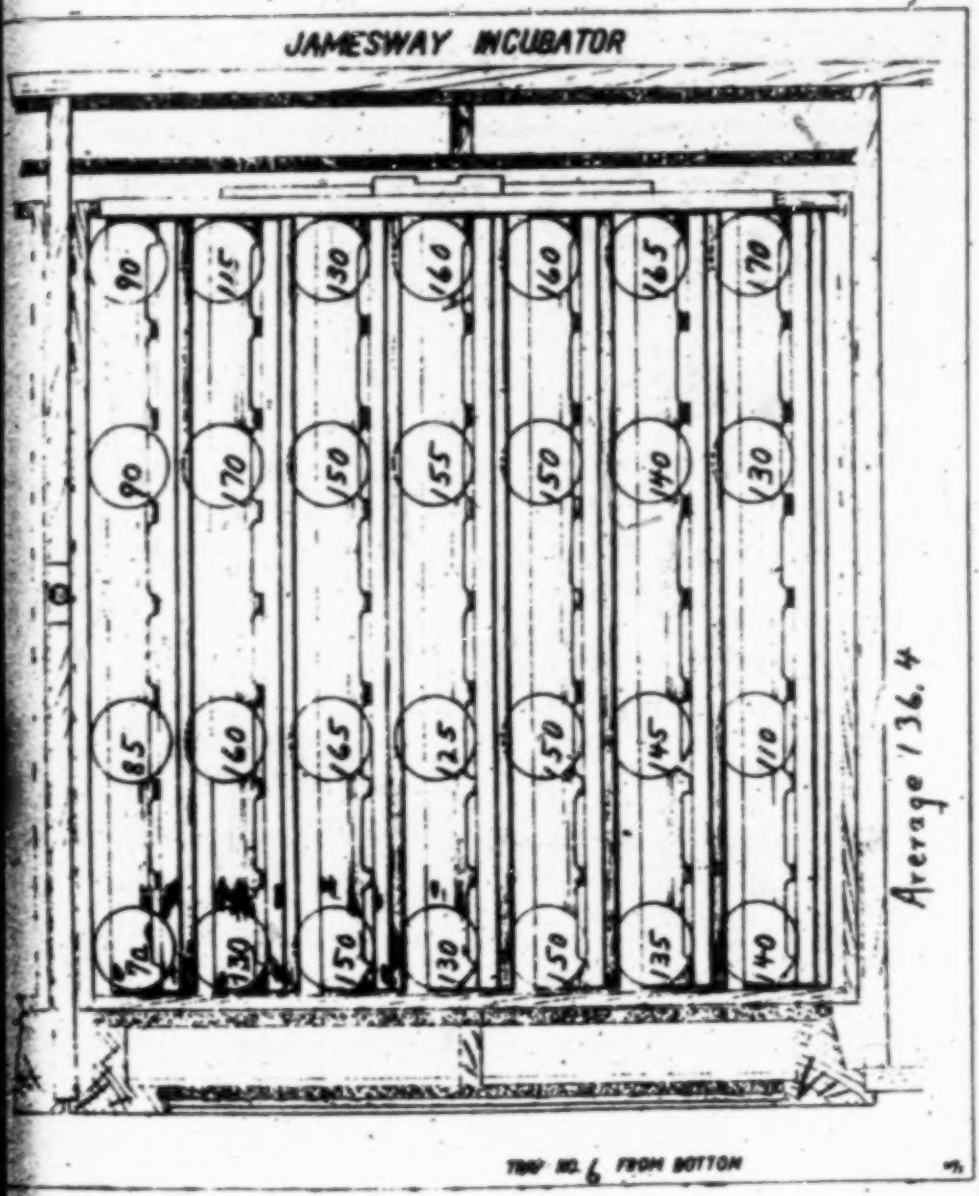
967


JAMESWAY INCUBATOR
110
130
130
120
135
120
140
120
170
150
110
135
130
130
120
190
170
105
130
130
130
20
140
160
135
150
155
160
Average 135.3
TRAY NO. 8 FROM BOTTOM

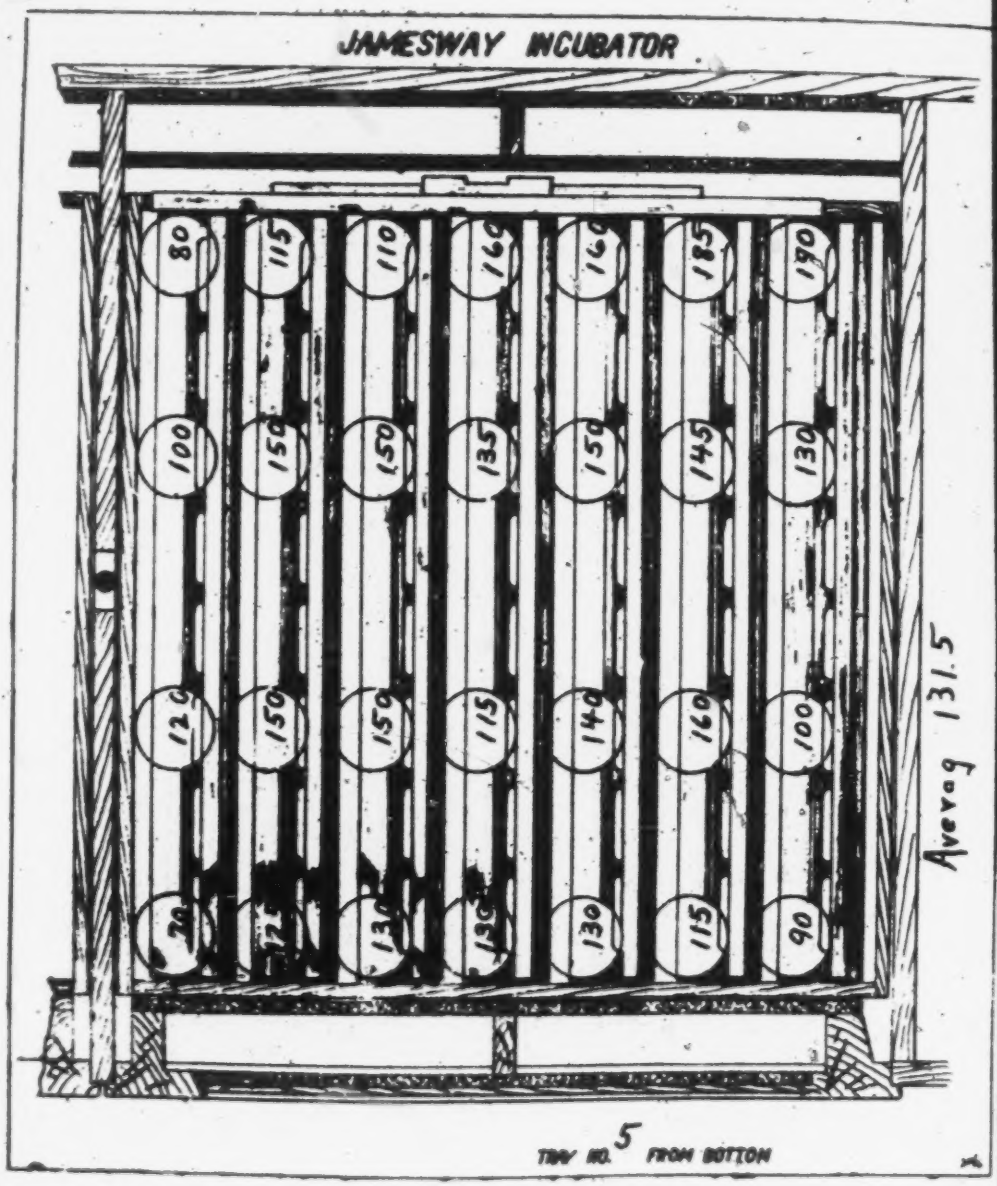
JAMESWAY INCUBATOR




TRAY NO. 9 FROM BOTTOM

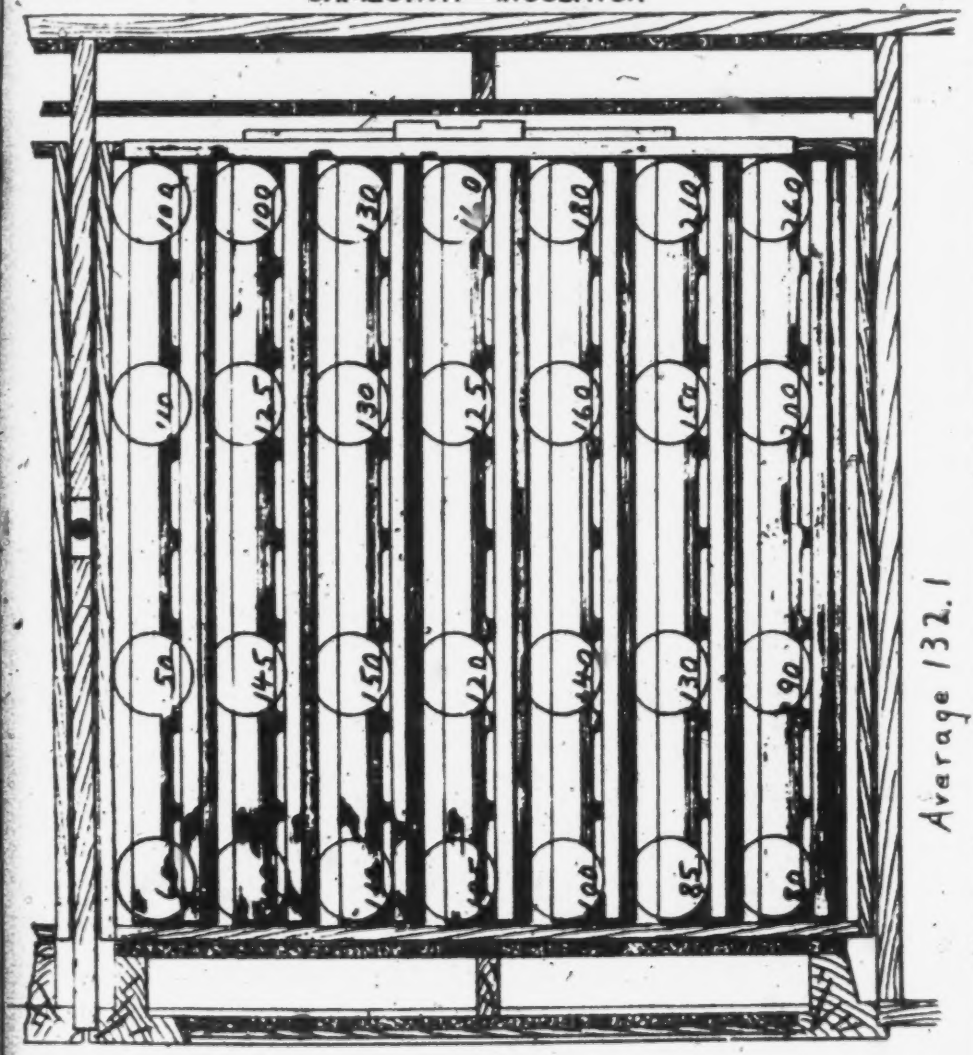

JAMESWAY INCUBATOR
90 115 130 160 160 165 170
90 170 150 155 150 140 130
85 160 165 125 150 145 110
70 130 150 130 150 135 140
Average 136.4
TRAY NO. 6 FROM BOTTOM

691


JAMESWAY INCUBATOR
80
115
110
160
160
185
190
100
150
150
135
150
145
130
120
150
150
115
140
160
100
20
130
130
130
115
90
Average 131.5
TRAY NO. 5 FROM BOTTOM

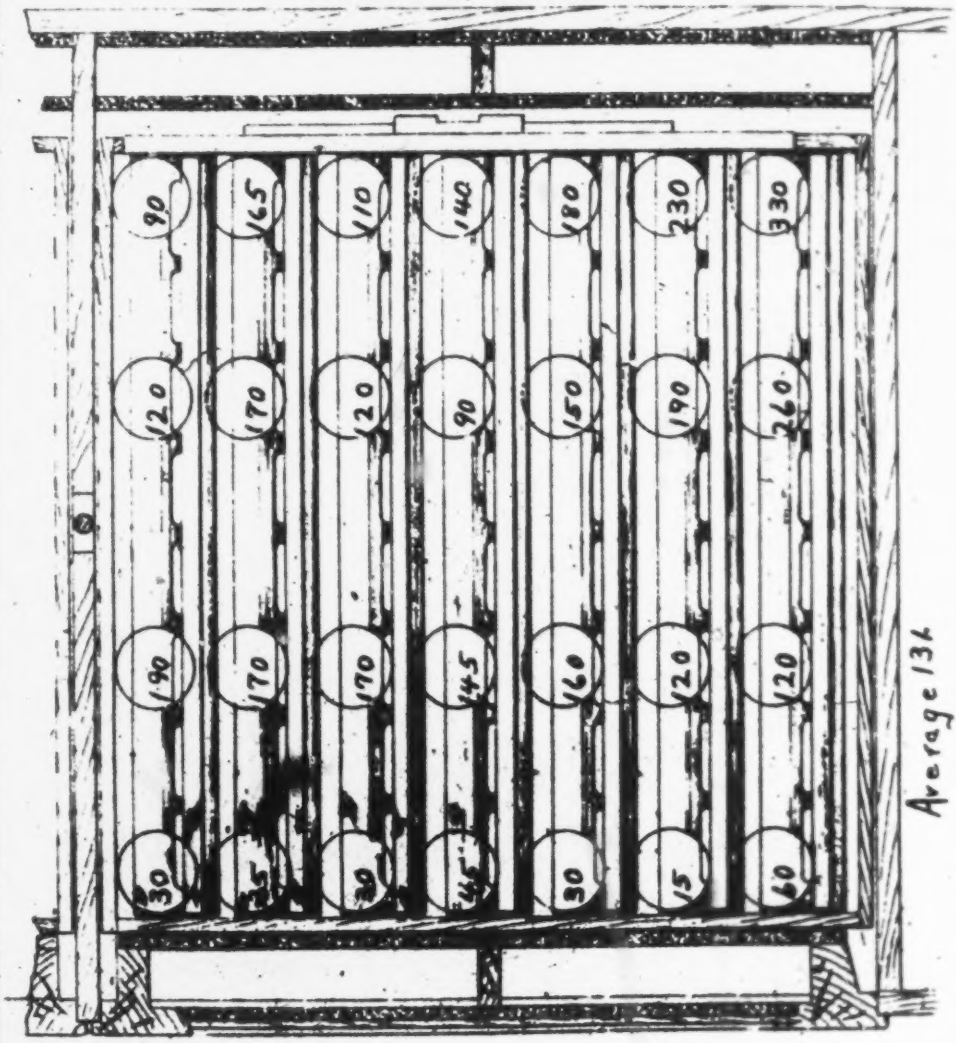
971

JAMESWAY INCUBATOR



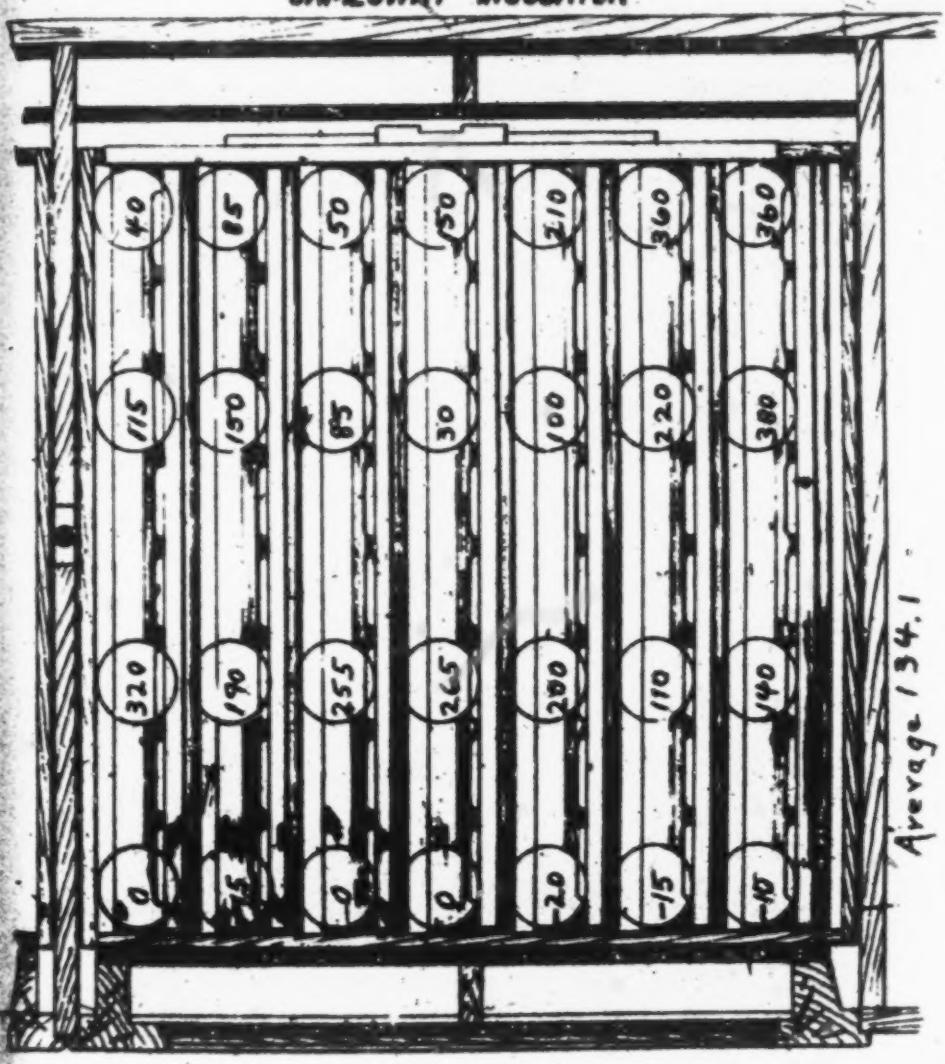

TRAY NO. 4 FROM BOTTOM

JAMESWAY INCUBATOR



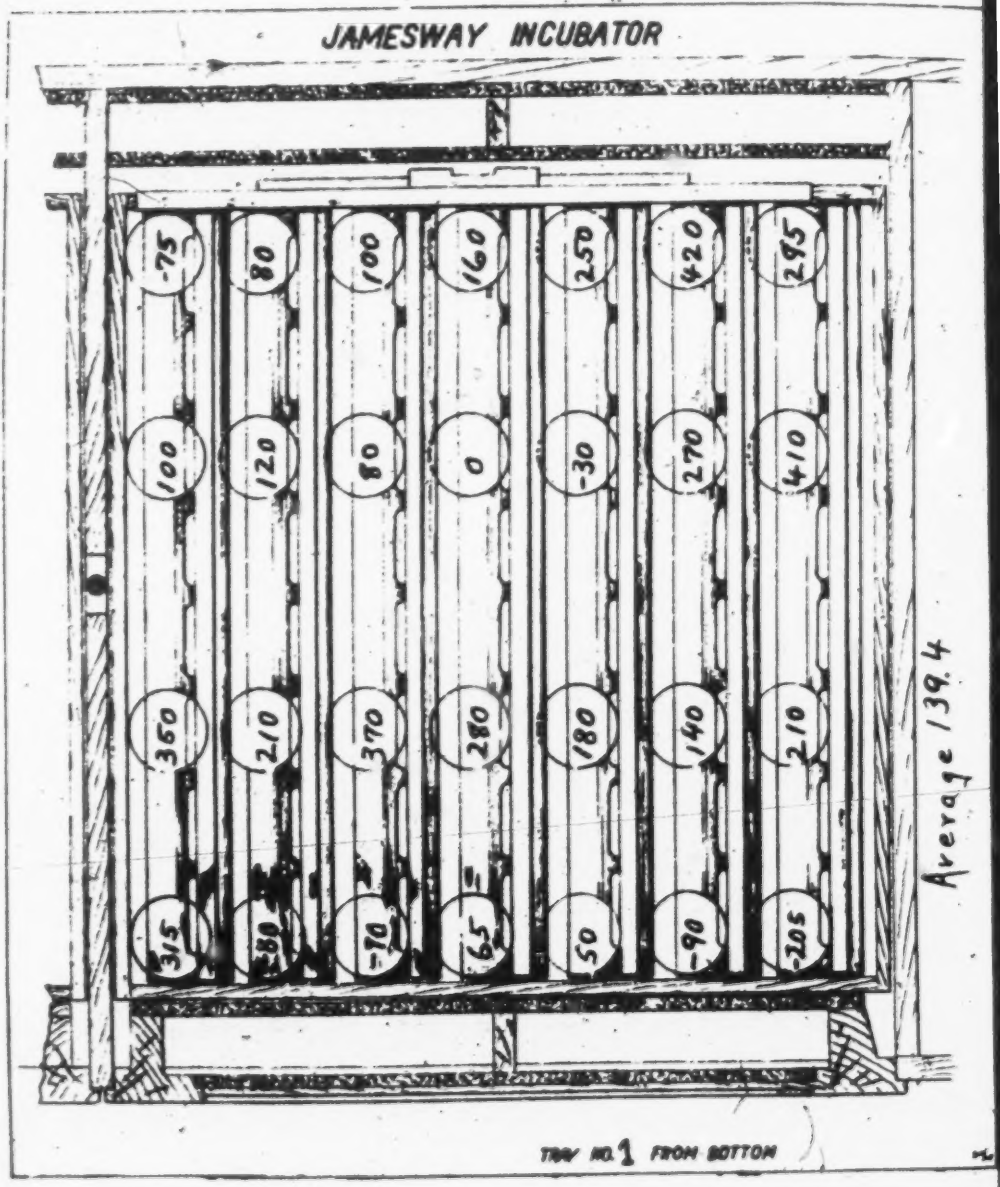

TRAY NO. 3 FROM BOTTOM

JAMESWAY INCUBATOR




TRAY NO. 2 FROM BOTTOM

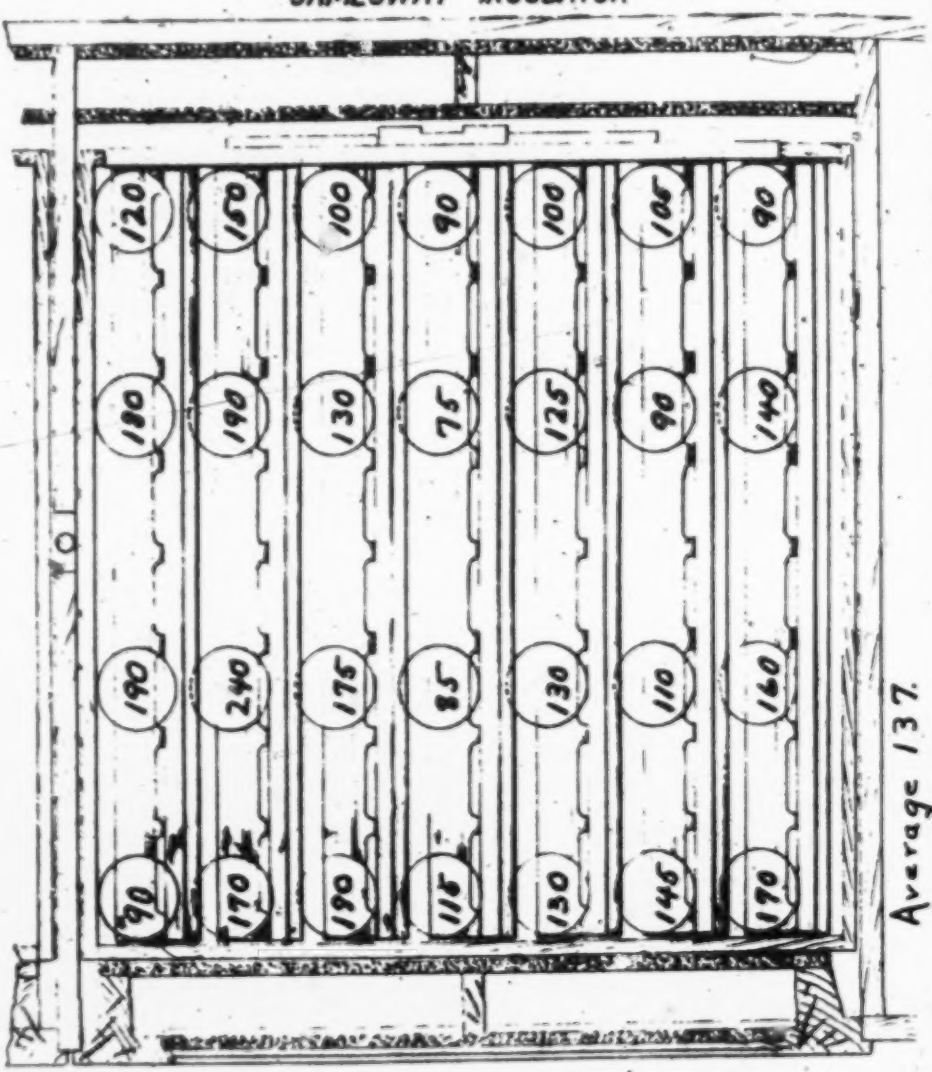
695


JAMESWAY INCUBATOR
-75
80
100
160
250
420
295
100
120
80
0
-30
270
410
360
210
370
280
180
140
210
315
-80
-70
65
50
-90
-205
Average 139.4
TRAY NO. 1 FROM BOTTOM

975

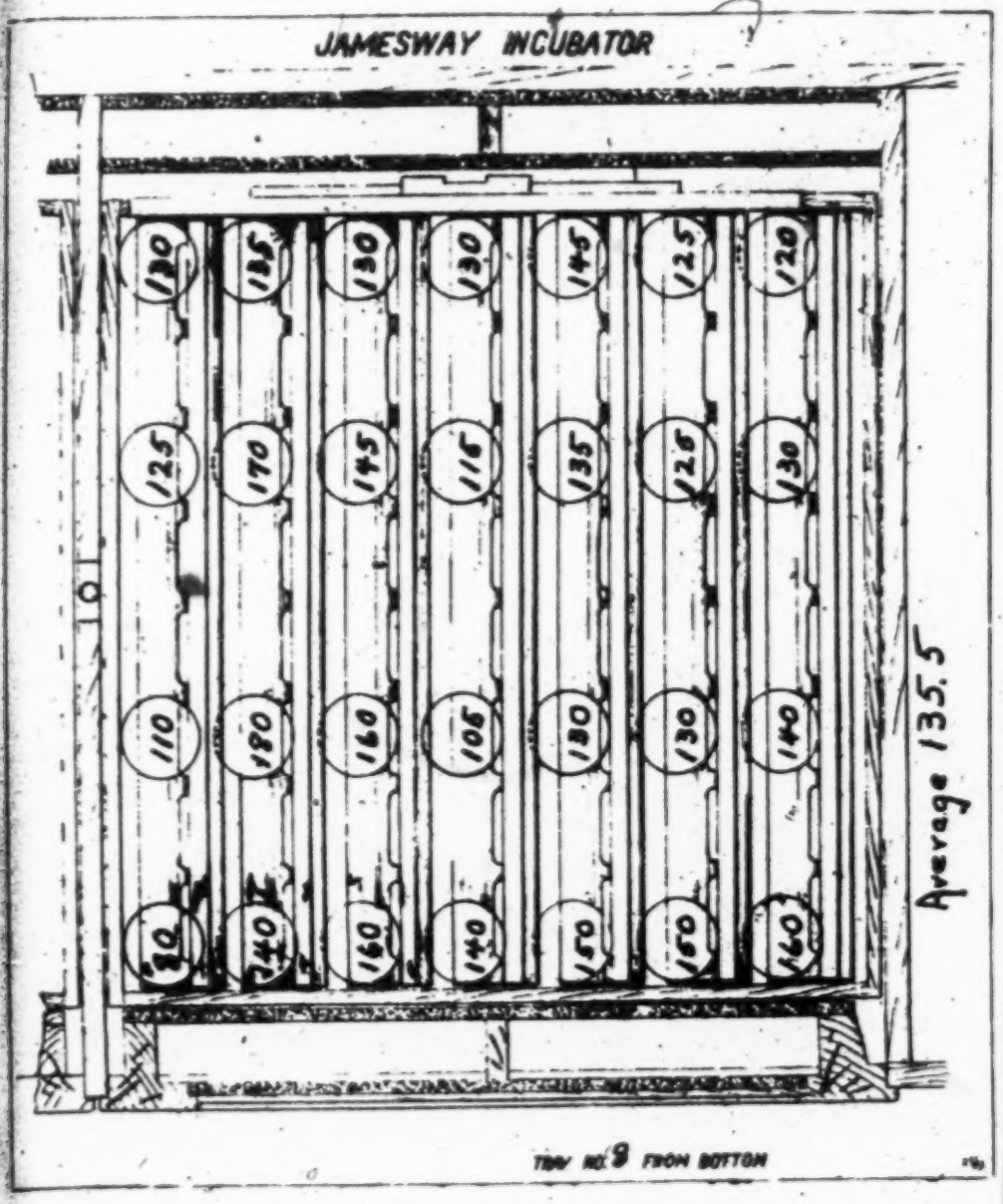
PLAINTIFF'S EXHIBIT No. 25

JAMESWAY INCUBATOR

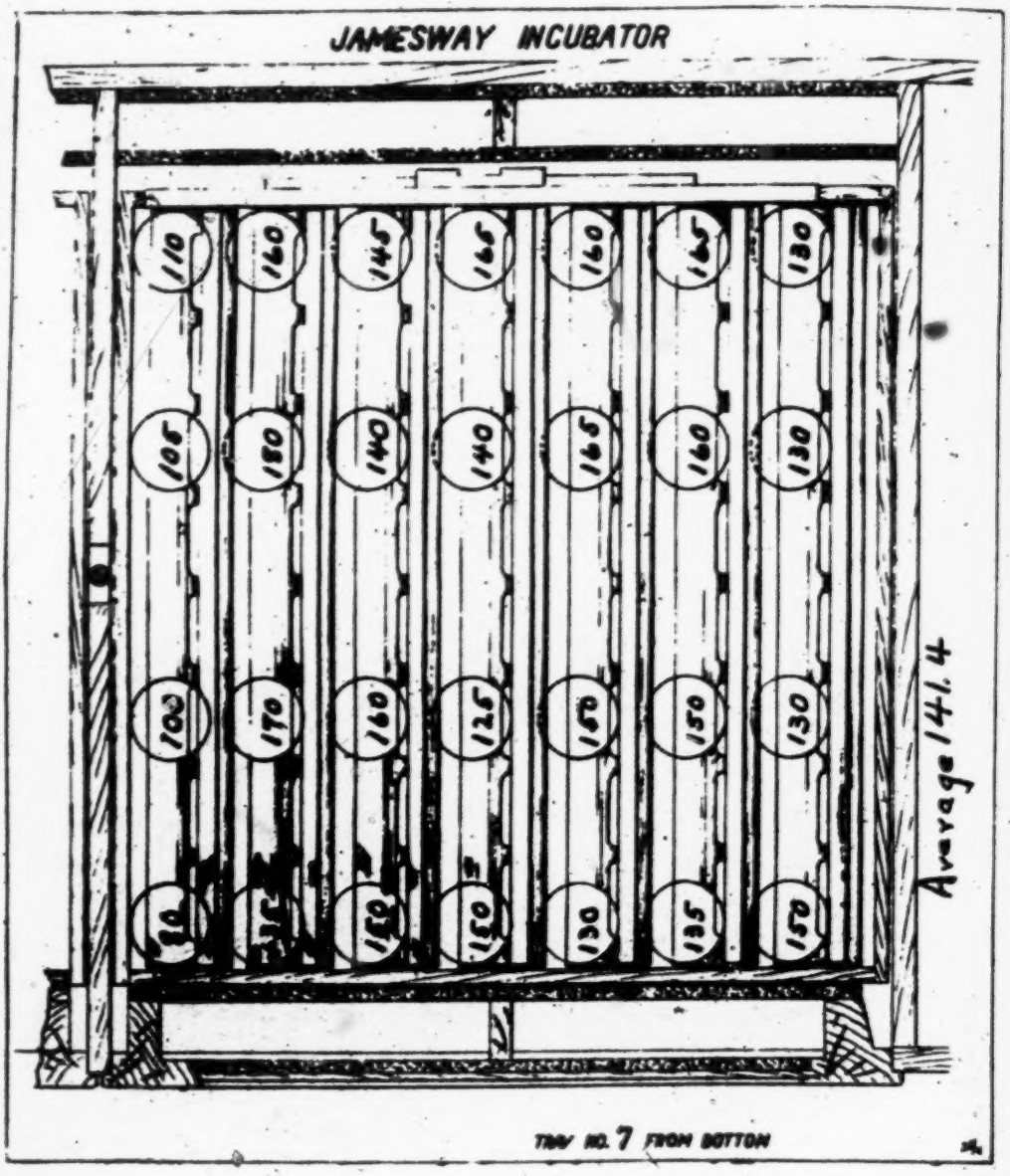



TRAY NO. 9 FROM BOTTOM

977


JAMESWAY INCUBATOR
120 135 130 130 145 125 120
125 170 145 115 135 125 130
110 180 160 105 180 130 140
130 140 160 140 150 150 160
Average 135.5
TRAY NO. 9 FROM BOTTOM

699


JAMESWAY INCUBATOR
110
160
145
165
160
165
130
105
150
140
140
165
160
130
100
170
160
125
150
150
130
90
135
150
150
130
135
150
Average 141.4
TRAY NO. 7 FROM BOTTOM

979

700

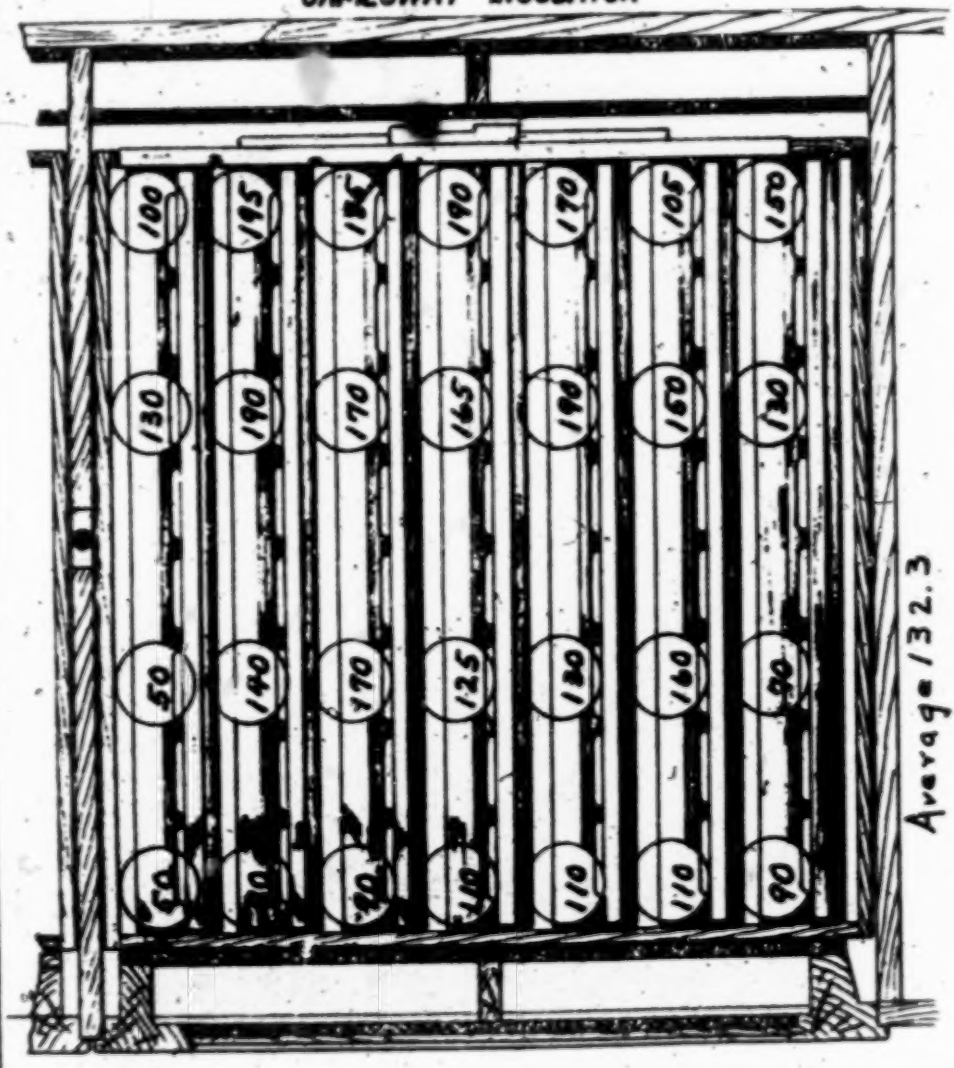
JAMESWAY INCUBATOR



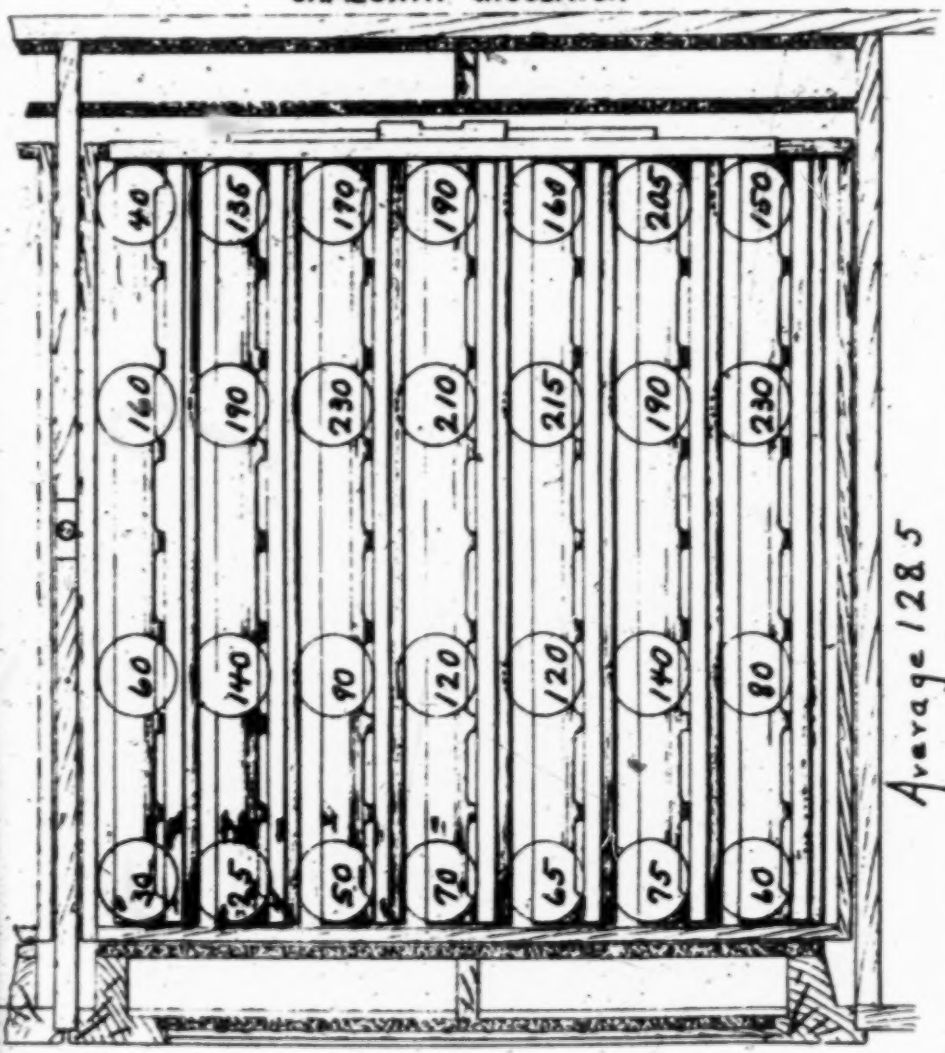

TRAY NO. 6 FROM BOTTOM

980

JAMESWAY INCUBATOR



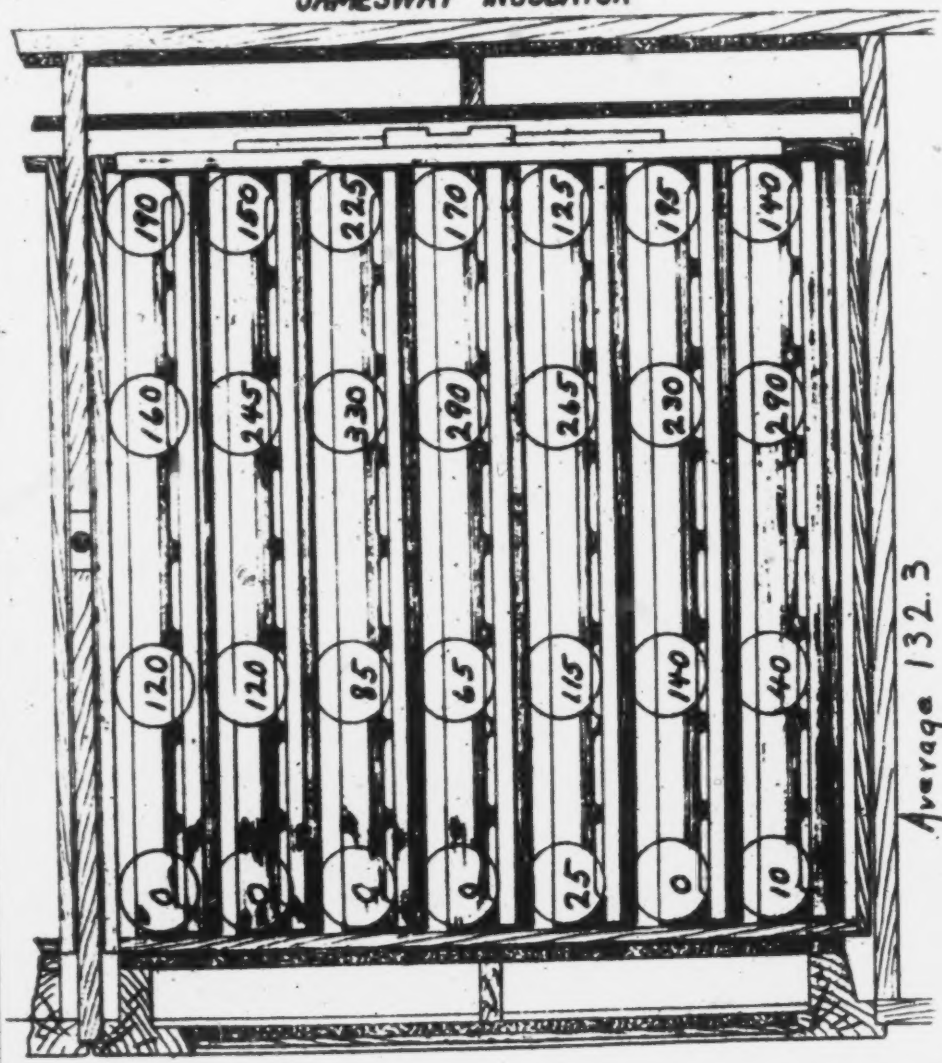
## JAMESWAY INCUBATOR




Average 1285

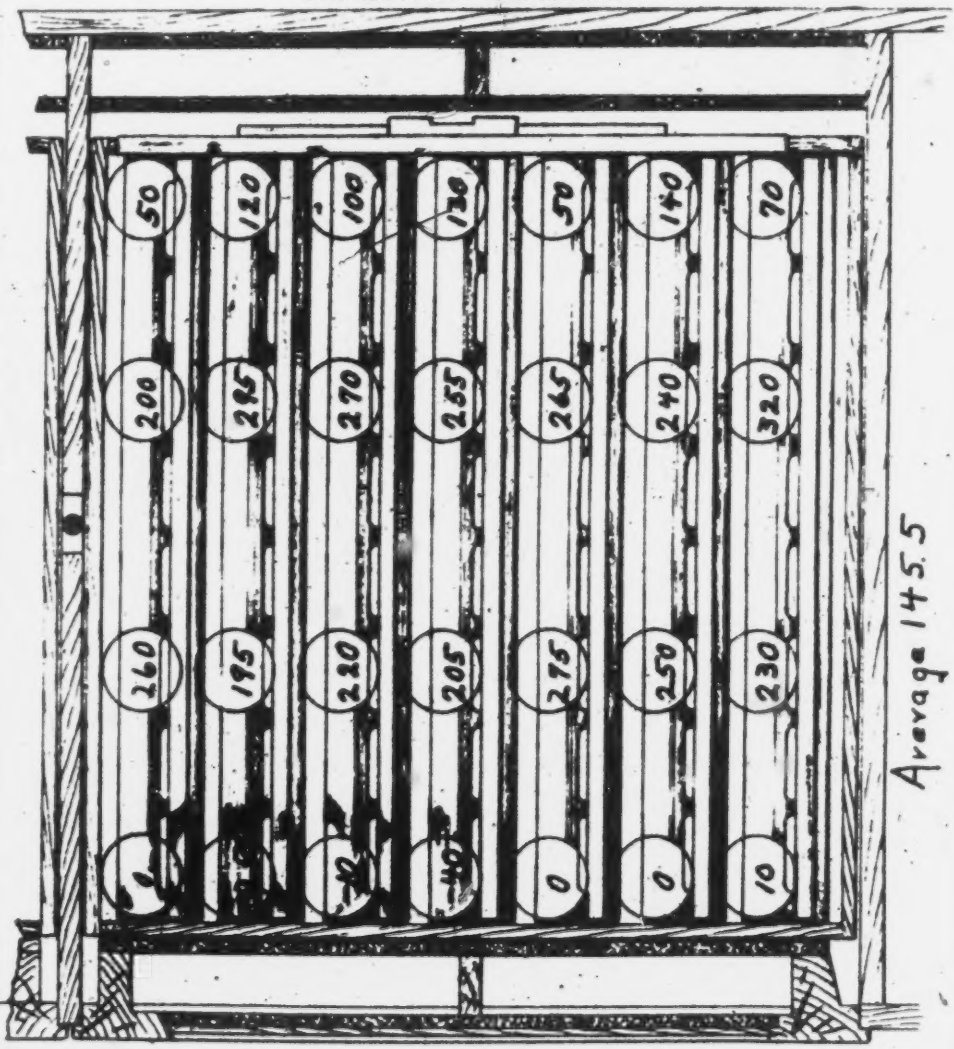
TRAY NO. 4 FROM BOTTOM

JAMESWAY INCUBATOR



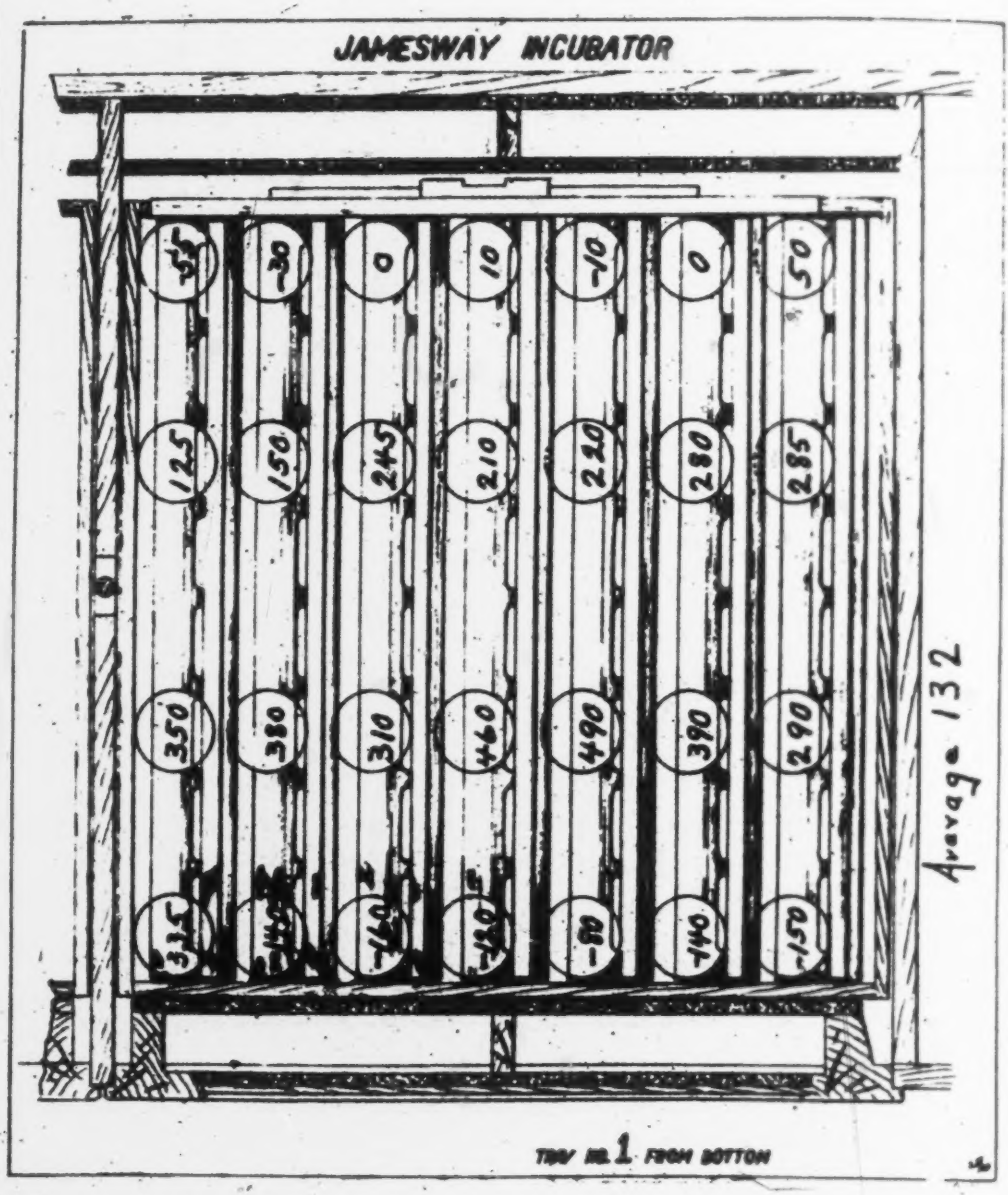

TRAY NO. 3 FROM BOTTOM

JAMESWAY INCUBATOR




TRAY NO. 2 FROM BOTTOM

705

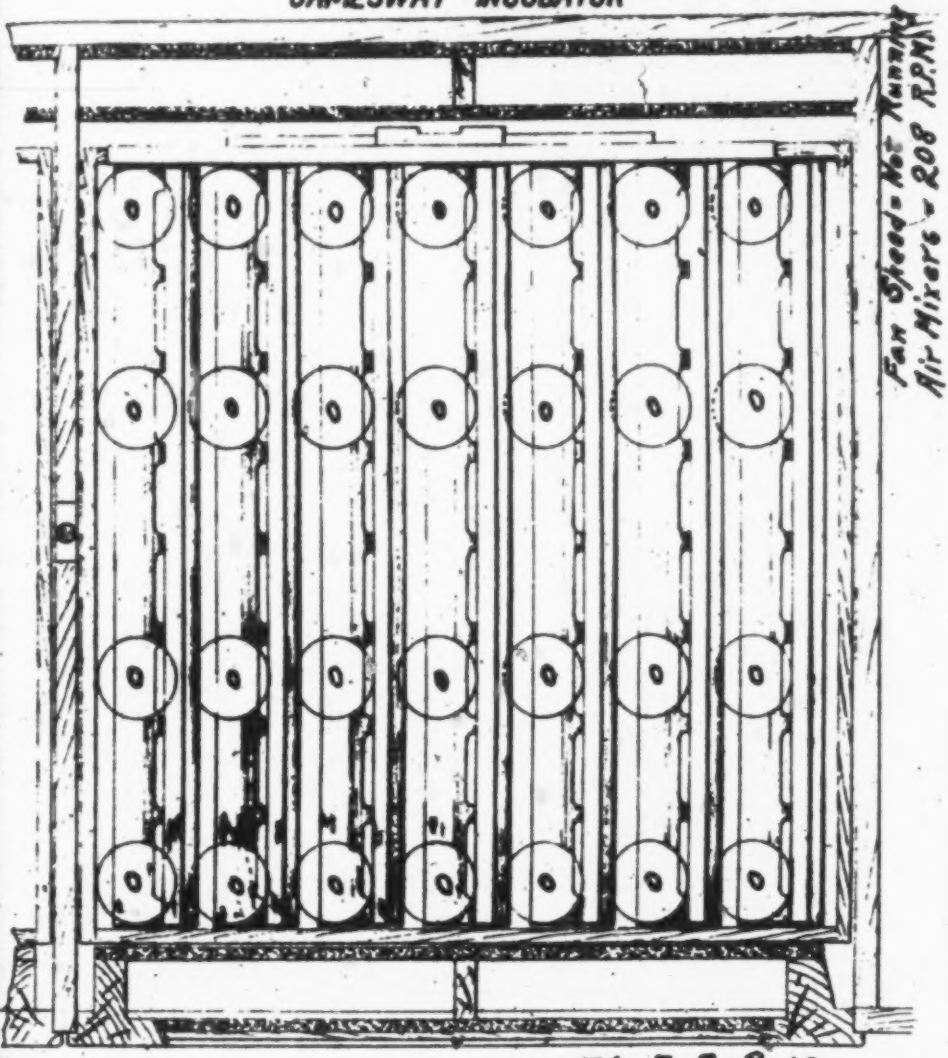

JAMESWAY INCUBATOR
-55
-30
0
10
-10
0
50
125
150
245
210
220
280
285
350
380
310
460
490
390
290
-135
-140
-140
-140
-80
-140
-150
Average 132
TRAY NO. 1 FROM BOTTOM

985

PLAINTIFF'S EXHIBIT No. 88

706

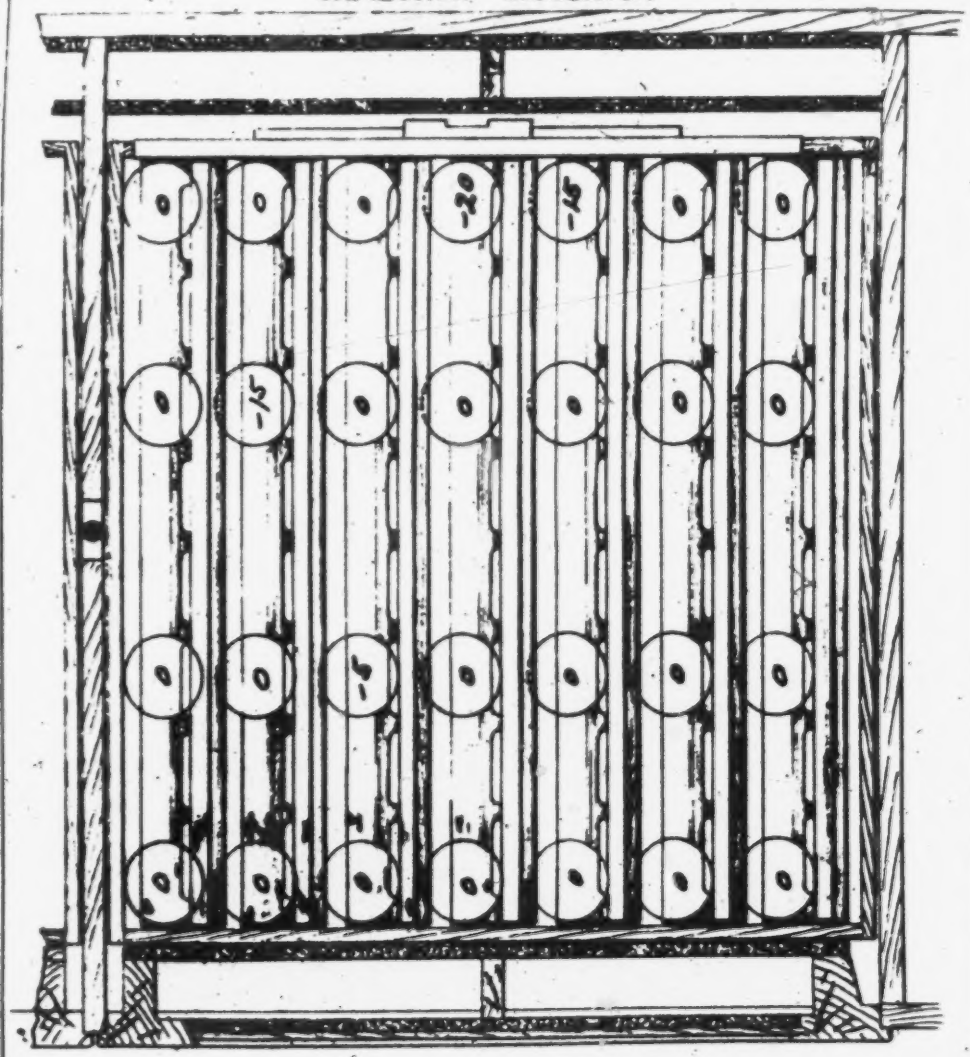
JAMESWAY INCUBATOR




986

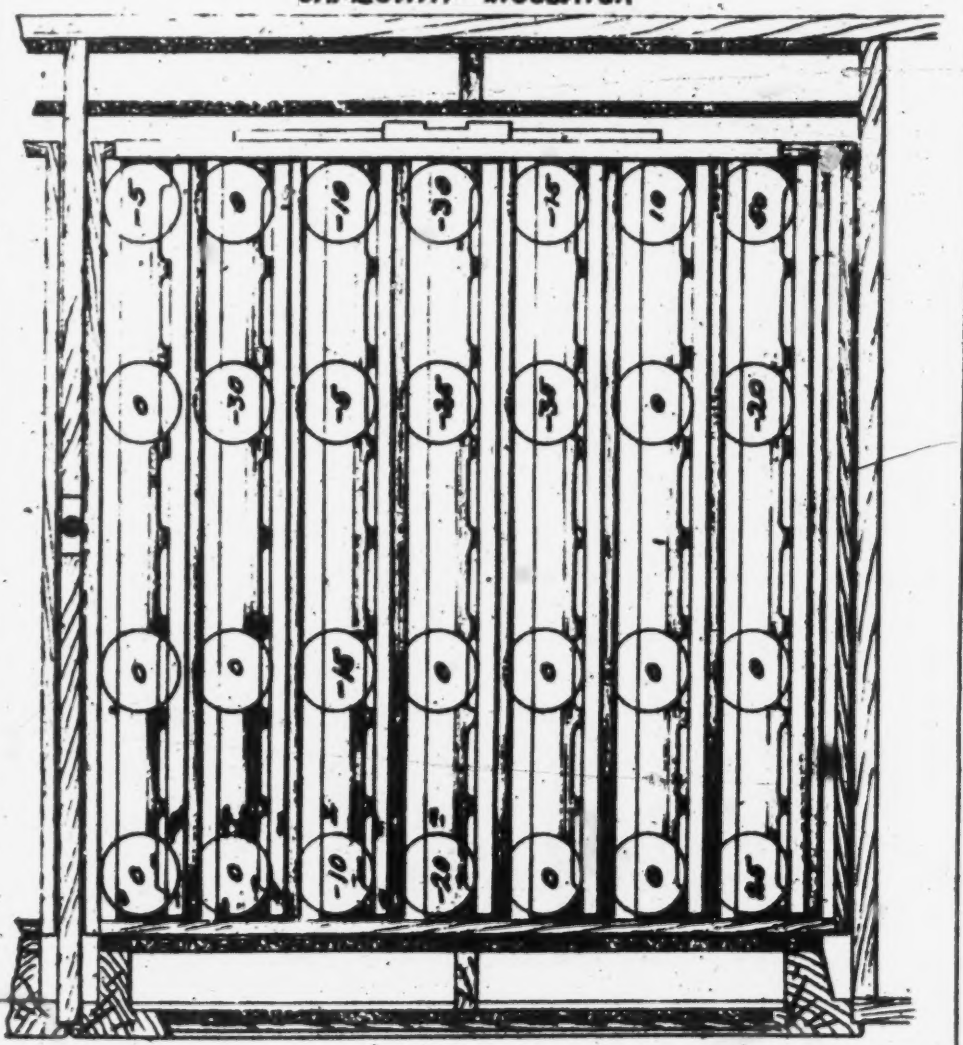
707

JAMESWAY INCUBATOR



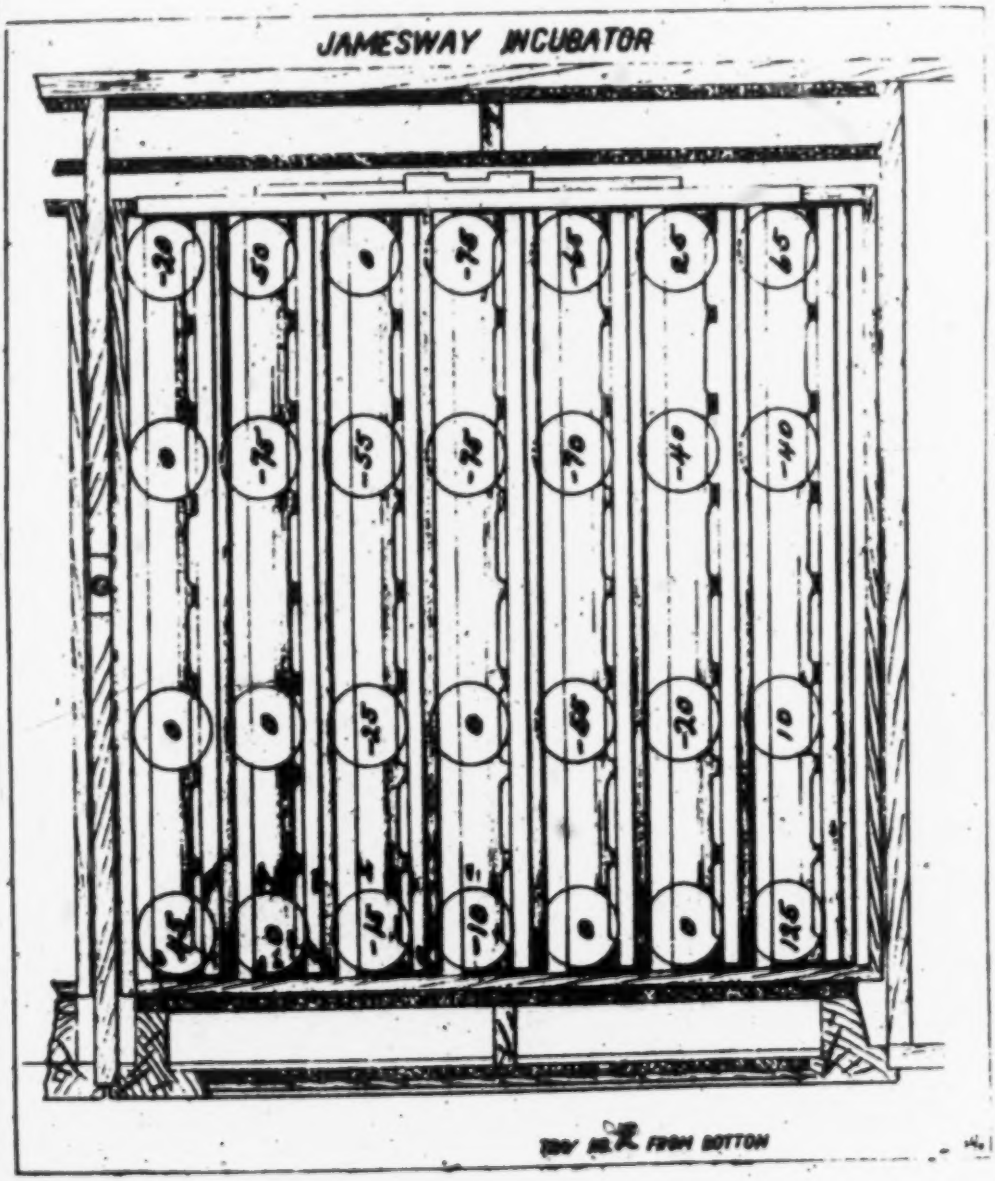

987

JAMESWAY INCUBATOR




TRAY NO. 3 FROM BOTTOM

709

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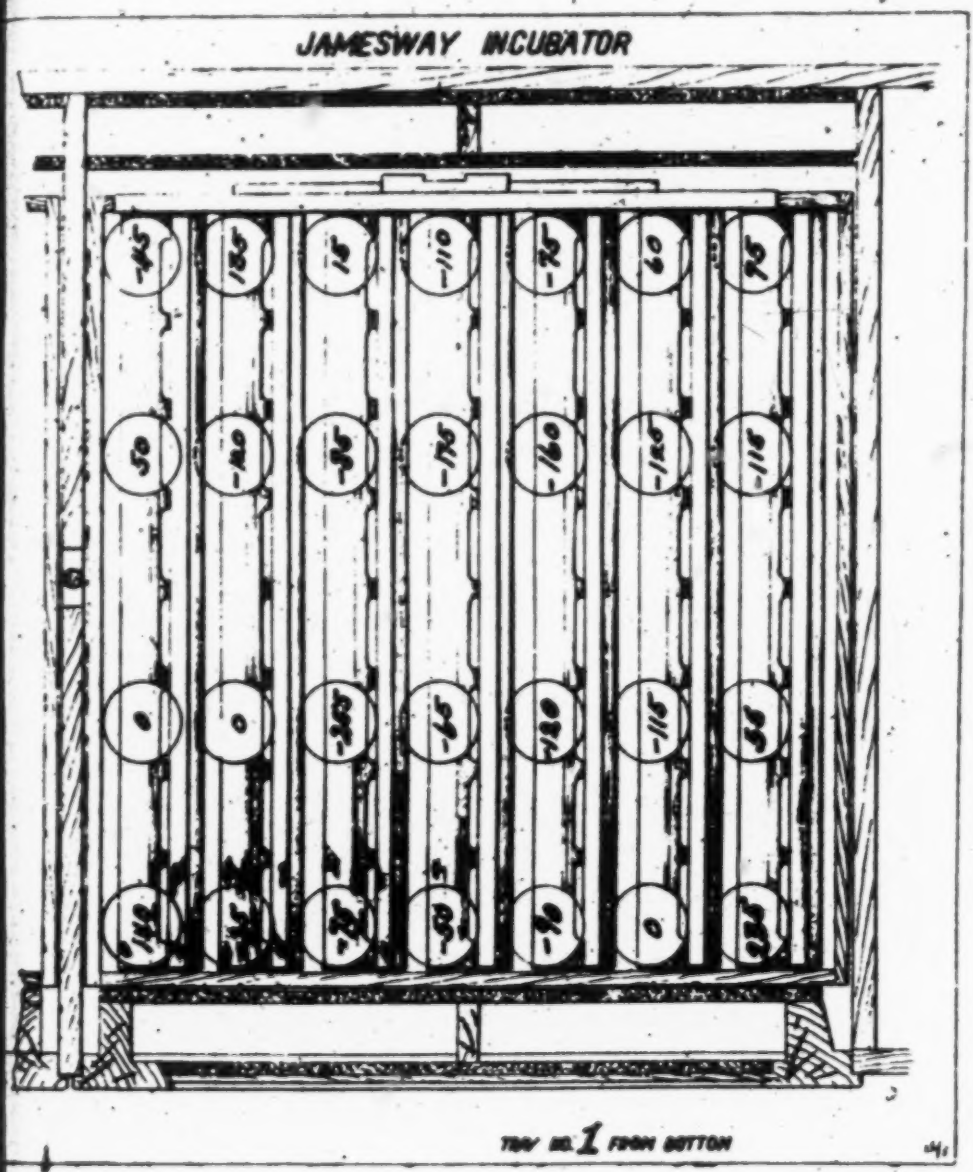
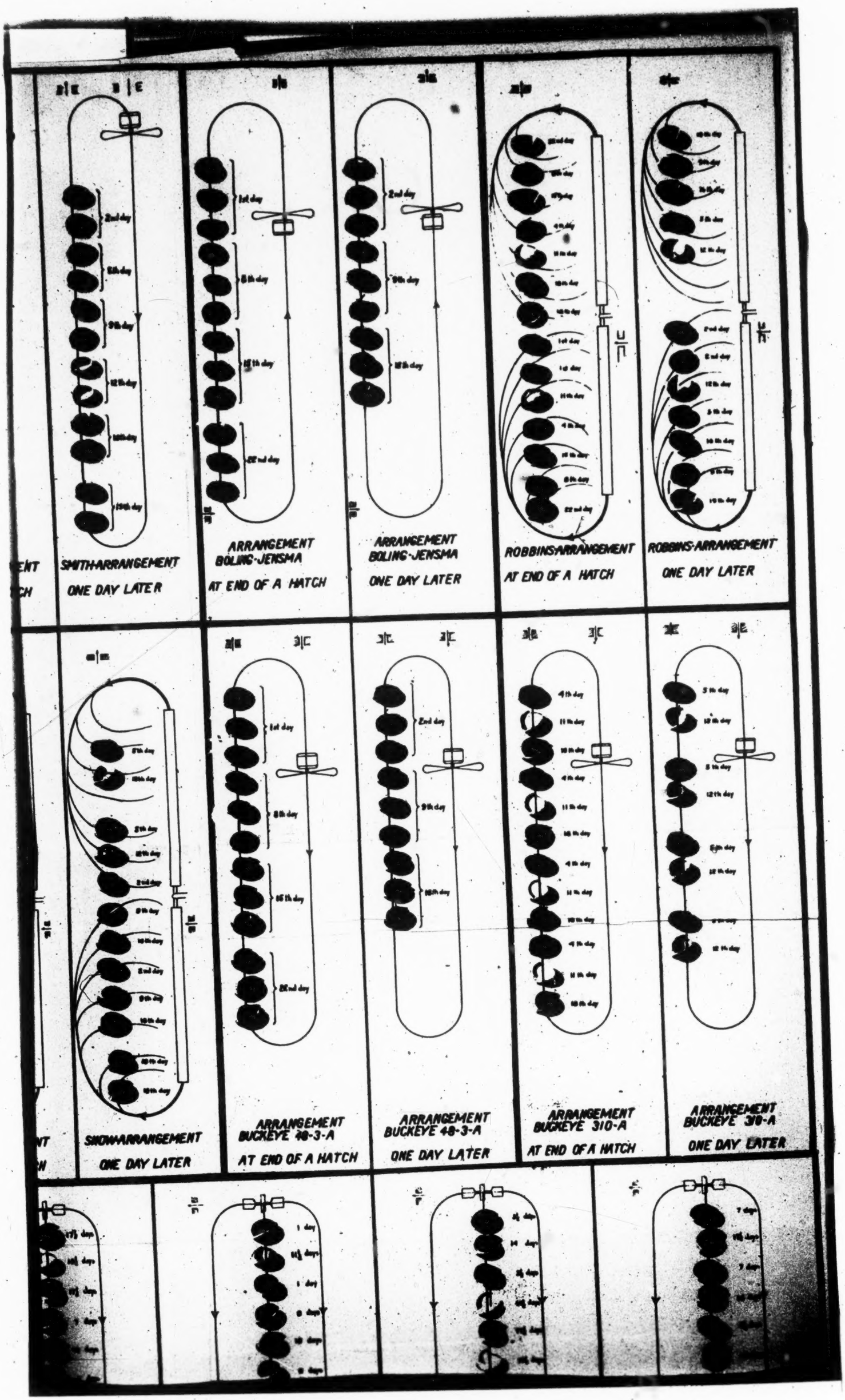
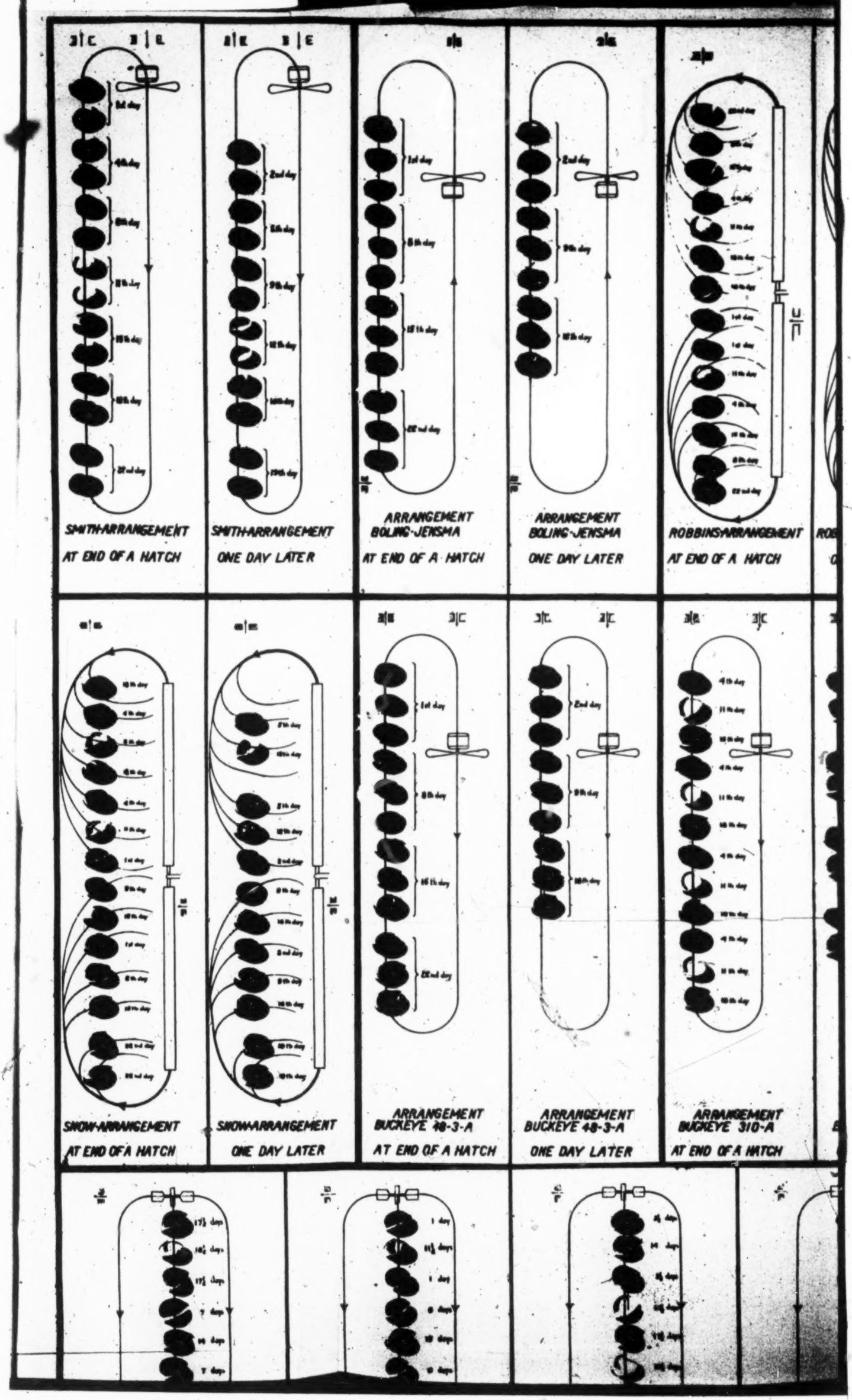
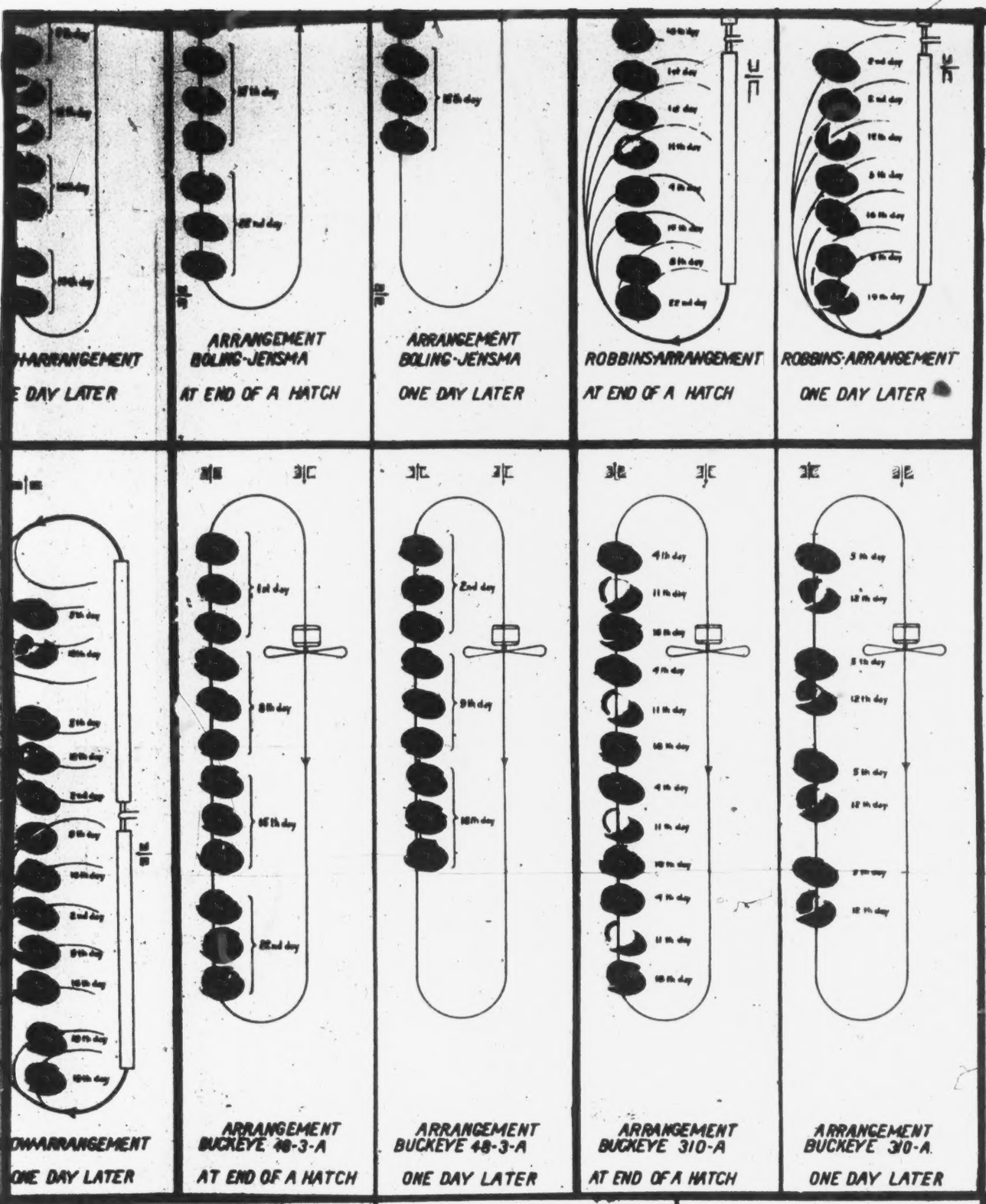

JAMESWAY INCUBATOR
TRAY NO. 1 FROM BOTTOM


SMITH-ARRANGEMENT
ONE DAY LATER
ARRANGEMENT
BOLING-JENSMA
AT END OF A HATCH
ARRANGEMENT
BOLING-JENSMA
ONE DAY LATER
ROBBINS-ARRANGEMENT
AT END OF A HATCH
ROBBINS-ARRANGEMENT
ONE DAY LATER
SHOWARRANGEMENT
ONE DAY LATER
ARRANGEMENT
BUCKEYE 48-3-A
AT END OF A HATCH
ARRANGEMENT
BUCKEYE 48-3-A
ONE DAY LATER
ARRANGEMENT
BUCKEYE 310-A
AT END OF A HATCH
ARRANGEMENT
BUCKEYE 310-A
ONE DAY LATER


SMITH-ARRANGEMENT
AT END OF A HATCH
SMITH-ARRANGEMENT
ONE DAY LATER
ARRANGEMENT
BOLING-JENSMA
AT END OF A HATCH
ARRANGEMENT
BOLING-JENSMA
ONE DAY LATER
ROBBINS-ARRANGEMENT
AT END OF A HATCH
SHOW-ARRANGEMENT
AT END OF A HATCH
SHOW-ARRANGEMENT
ONE DAY LATER
ARRANGEMENT
BUCKEYE 48-3-A
AT END OF A HATCH
ARRANGEMENT
BUCKEYE 48-3-A
ONE DAY LATER
ARRANGEMENT
BUCKEYE 310-A
AT END OF A HATCH



...HARRANGEMENT
...E DAY LATER

ARRANGEMENT
BOLING-JENSMA
AT END OF A HATCH

ARRANGEMENT
BOLING-JENSMA
ONE DAY LATER

ROBBINS ARRANGEMENT
AT END OF A HATCH

ROBBINS ARRANGEMENT
ONE DAY LATER

...OWARRANGEMENT
...ONE DAY LATER

ARRANGEMENT
BUCKEYE 48-3-A
AT END OF A HATCH

ARRANGEMENT
BUCKEYE 48-3-A
ONE DAY LATER

ARRANGEMENT
BUCKEYE 310-A
AT END OF A HATCH

ARRANGEMENT
BUCKEYE 310-A
ONE DAY LATER

...ENT

JAMESWAY ARRANGEMENT
ONE DAY LATER

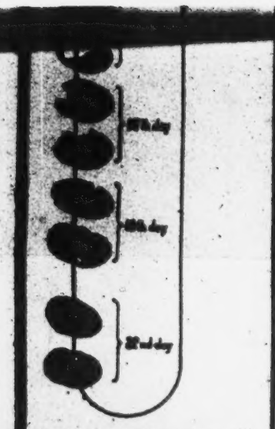
JAMESWAY ARRANGEMENT
2½ DAYS LATER

JAMESWAY ARRANGEMENT
ONE WEEK LATER

BLUE-ENDOTHERMIC EGGS  RED-EXOTHERMIC EGGS

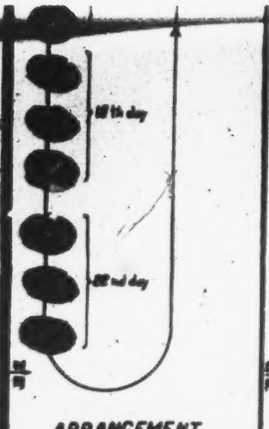
# EGG ARRANGEMENT CHART

PLAINTIFF'S EXHIBIT NO. 694

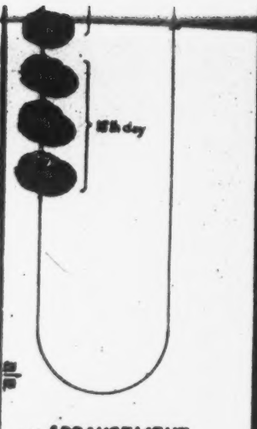


SMITH-ARRANGEMENT
AT END OF A HATCH

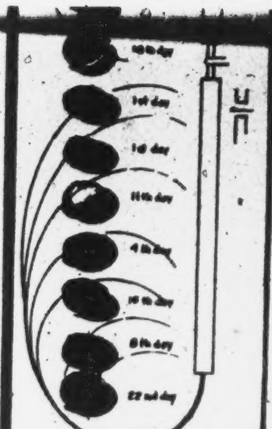
SMITH-ARRANGEMENT
ONE DAY LATER



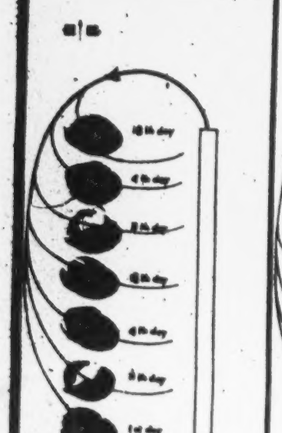
ARRANGEMENT
BOLING-JENSMA
AT END OF A HATCH



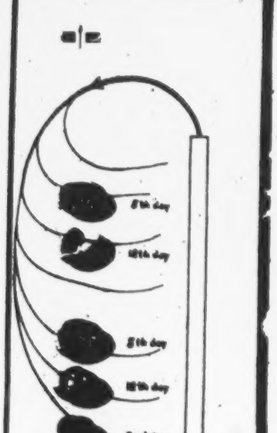
ARRANGEMENT
BOLING-JENSMA
ONE DAY LATER



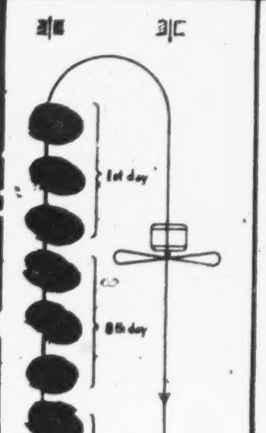
ROBBINS-ARRANGEMENT
AT END OF A HATCH



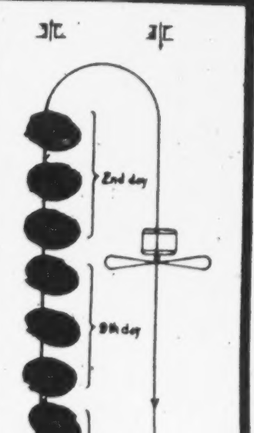
SNOW-ARRANGEMENT
AT END OF A HATCH



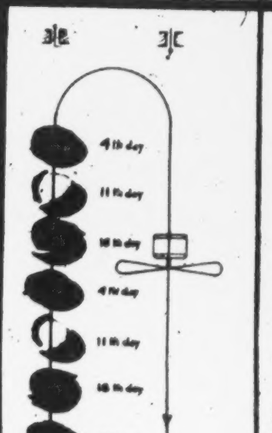
SNOW-ARRANGEMENT
ONE DAY LATER



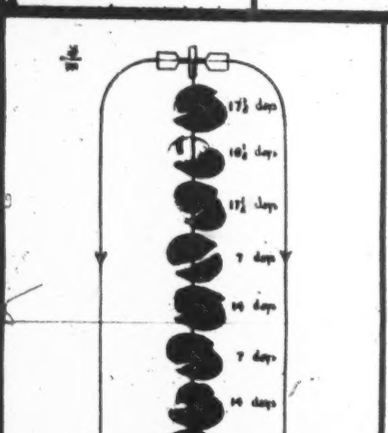
ARRANGEMENT
BUCKEYE 48-3-A
AT END OF A HATCH



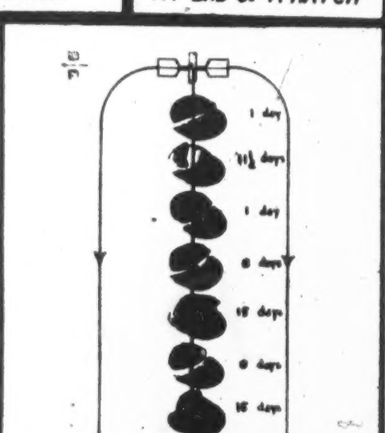
ARRANGEMENT
BUCKEYE 48-3-A
ONE DAY LATER



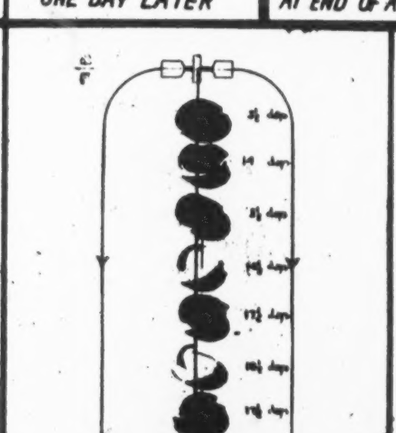
ARRANGEMENT
BUCKEYE 310-A
AT END OF A HATCH



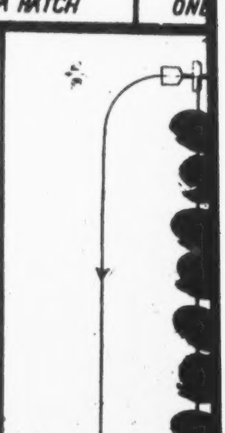
JAMESWAY ARRANGEMENT
AT END OF A HATCH



JAMESWAY ARRANGEMENT
ONE DAY LATER



JAMESWAY ARRANGEMENT
3½ DAYS LATER



JAMESWAY AR
ONE WEEK

BLUE-ENDOTHERMIC EGGS  RED-EXOTHERMIC EGGS

# EGG ARRANGEMENT CHART

PLAINTIFF'S EXHIBIT No. 28

## To Hatch the Egg of the Domestic Fowl Requires the Following Environments:

1. A proper temperature must be maintained.
2. The moisture within the egg must be conserved.
3. Sufficient fresh air must be supplied for oxygen.
4. The egg must be turned from time to time.

### Scientific study of the method of hatching used by the hen discloses that:

1. The eggs in her nest are all in the same stage of hatching.
2. The eggs are all arranged on one level.
3. The heat is applied from above.
4. The nest under the eggs is several degrees cooler than the hen's body.
5. The eggs are protected from drafts.
6. The eggs are cooled once or twice daily.
7. The temperature within the nest increases as the hatch progresses.
8. Moisture is conserved by restricting air movement.
9. The eggs are turned frequently by rolling or shuffling.

### Incubators of the type in commercial use in 1915 follow the teachings of the hen in that:

1. The eggs in the incubator are all in the same stage of hatching.
2. The eggs are all arranged on one level.
3. The heat is applied from above.
4. The air below the eggs is several degrees cooler than that above.
5. The eggs are protected from drafts.
6. The eggs are cooled once or twice daily.
7. The temperature within the cabinet is raised each week as the hatch progresses.
8. Moisture is conserved by restricting air movement. All air entering the incubator passes through the cabinet once and is exhausted to the outside.
9. The eggs are turned frequently by rolling or shuffling.

### Smith revolutionized the whole theory of incubation. He broke away from the prior art:

1. By having eggs in various stages of hatching within the same incubator.
2. By arranging the eggs at different levels.
3. By applying heat to all sides of the eggs.
4. By having the air below the eggs the same temperature as that above.
5. By applying a forced draft of air over and about the eggs constantly.
6. By not cooling the eggs once or twice daily.
7. By not changing the temperature of the cabinet as the hatch progressed.
8. By not restricting air movement to conserve moisture, but by arranging the exhaust openings so that only a small amount of air is exhausted while the main body of air is forced through the cabinet over and over again in repeated cycles.
9. By tilting the eggs on their small end to effect the turning.
10. By utilizing the heat of the eggs in advanced stages of hatching to help incubate the eggs in the earlier stages.
11. By utilizing the heat absorbing properties of the eggs in the first ten days of hatching to help cool more advanced eggs.

### The Jamesway Incubator follows the teachings of Smith using the same identical steps:

1. By having eggs in various stages of hatching within the same incubator.
2. By arranging the eggs at different levels.
3. By applying heat to all sides of the eggs.
4. By having the air below the eggs the same temperature as that above.
5. By applying a forced draft of air over and about the eggs constantly.
6. By not cooling the eggs once or twice daily.
7. By not changing the temperature of the cabinet as the hatch progressed.
8. By not restricting air movement to conserve moisture, but by arranging the exhaust openings so that only a small amount of air is exhausted while the main body of air is forced through the cabinet over and over again in repeated cycles.
9. By tilting the eggs on their small end to effect the turning.
10. By utilizing the heat of the eggs in advanced stages of hatching to help incubate the eggs in the earlier stages.
11. By utilizing the heat absorbing properties of the eggs in the first ten days of hatching to help cool more advanced eggs.

JIT. 2/20/14

## RECORD COVERING GROSS SALES OF FORCED DRAFT INCUBATORS

| YEAR | ROCKEYE NUMBER UNITS | ROCKEYE VALUE | ROCKEYE EGG CAPACITY | YEAR | SMITH NUMBER UNITS | SMITH VALUE | SMITH EGG CAPACITY | COMBINED SMITH AND ROCKEYE NUMBER UNITS | COMBINED SMITH AND ROCKEYE VALUE | COMBINED SMITH AND ROCKEYE EGG CAPACITY |
|---|---|---|---|---|---|---|---|---|---|---|
| 1917 | 39 | 1,740.00 | Not Known | | | | | 39 | 1,740.00 | |
| 1918 | 103 | 38,962.96 | " " | | | | | 103 | 38,962.96 | |
| 1919 | 168 | 93,771.33 | " " | | | | | 168 | 93,771.33 | |
| 1920 | 215 | 217,718.85 | " " | | | | | 215 | 217,718.85 | |
| 1921 | 236 | 270,299.41 | 1,435,152 | | | | | 236 | 270,299.41 | 1,435,152 |
| 1922 | 557 | 684,497.13 | 4,470,384 | 1922 | 60 | 437,500.00 | 2,820,000 | 617 | 1,121,997.13 | 7,290,384 |
| 1923 | 707 | 725,847.66 | 5,737,248 | 1923 | 84 | 584,000.00 | 3,948,000 | 791 | 1,309,847.66 | 9,685,248 |
| 1924 | 845 | 773,017.75 | 6,059,052 | 1924 | 79 | 528,720.00 | 3,713,000 | 924 | 1,301,737.75 | 9,772,052 |
| 1925 | 1,156 | 1,247,399.49 | 10,879,392 | 1925 | 145 | 928,930.00 | 6,721,000 | 1,301 | 2,176,329.49 | 17,600,392 |
| 1926 | 1,569 | 1,890,042.13 | 15,839,700 | 1926 | 321 | 2,106,051.00 | 15,087,000 | 1,890 | 3,996,093.13 | 30,926,700 |
| 1927 | 1,450 | 1,795,432.26 | 16,255,208 | 1927 | 327 | 2,162,479.50 | 15,369,000 | 1,777 | 3,957,911.76 | 31,624,208 |
| 1928 | 613 | 669,984.44 | 6,069,388 | 1928 | 170 | 1,125,321.00 | 8,615,000 | 783 | 1,795,305.44 | 14,684,388 |
| 1929 | 1,040 | 1,312,227.27 | 12,724,368 | 1929 | 345 | 2,179,453.50 | 16,928,000 | 1,385 | 3,491,680.77 | 29,652,368 |
| 1930 | 619 | 832,783.77 | 7,778,412 | 1930 | 264 | 1,615,900.25 | 12,650,000 | 883 | 2,448,684.02 | 20,428,412 |
| 1931 | 763 | 997,418.36 | 9,932,810 | 1931 | 59 | 365,713.50 | 2,738,000 | 822 | 1,363,131.86 | 12,670,810 |
| 1932 | 237 | 279,905.81 | 2,139,270 | 1932 | 37 | 199,084.50 | 1,683,000 | 274 | 478,990.31 | 3,822,270 |
| July 31 1933 | 83 | 77,482.00 | 823,872 | August 31 1933 | 16 | 84,941.01 | 761,000 | 99 | 162,423.01 | 1,584,872 |
| | 10,400 | 11,908,530.61 | 100,144,256 | | 1,905 | 12,318,094.26 | 91,033,000 | 12,305 | 24,226,624.87 | 191,177,256 |

CLERK'S COPY.

# Vol. II

## TRANSCRIPT OF RECORD

## Supreme Court of the United States

OCTOBER TERM, 1936

## No. 36

SAMUEL B. SMITH, PETITIONER,

*vs.*

JAMES MANUFACTURING COMPANY AND ELMIRA HATCHERIES, INCORPORATED

ON WRIT OF CERTIORARI TO THE UNITED STATES CIRCUIT COURT OF APPEALS FOR THE SECOND CIRCUIT

PETITION FOR CERTIORARI FILED APRIL 21, 1936.

CERTIORARI GRANTED MAY 25, 1936.

VOL. II

# SUPREME COURT OF THE UNITED STATES

**OCTOBER TERM, 1936**

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SAMUEL B. SMITH, PETITIONER,

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## VOL. II.

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[fols. 994 & 995] PLAINTIFF'S EXHIBIT No. 32

Liber Z131, page 414

Assignment

Know All Men By These Presents, That, the undersigned, The Buckeye Incubator Company of Springfield, Ohio, being the owner of the title of United States letters patents No. 1,262,860, to Samuel B. Smith, dated April 16th, 1918, for incubator, and letters patent No. 1,263,138 to said Smith, dated April 16th, 1918, for incubator and of letters patent of the United States No. 1,543,130 to said Smith dated June 23rd, 1925, for incubator.

In consideration of one dollar in hand paid, and other valuable considerations, does hereby sell, assign, transfer and set over unto said Smith his heirs and assigns, all its right, title and interest in and to said letters patent and each of them and the several inventions thereof to be held and enjoyed by the said Smith, his heirs and assigns, as fully and completely as the same would have been held and enjoyed by said The Buckeye Incubator Company has this assignment not been made, together, also, with the right of recovery of damages and profits for past infringement.

Subject, however, to the license back from said Smith to said The Buckeye Incubator Company of even date herewith and the provisions of a certain agreement between the said parties, both of even date herewith, to which license and agreement reference is hereby made and the same are made part hereof as though incorporated herewith.

[fol. 996] In Witness Whereof, the said The Buckeye Incubator Company has hereunto set its hand by its President hereunto duly authorized and has affixed its corporate seal attested by its Secretary, at Springfield, the State of Ohio, on this 29th day of April, A. D. 1927.

The Buckeye Incubator Company, by A. R. Hill, President, by R. A. Essex, Secretary. (Seal.)

PLAINTIFF'S EXHIBIT No. 33

(Copy)

License

Know All Men By These Presents, That, I, Samuel B. Smith, of Cleveland, Ohio, being the owner, by a proper instrument in writing even date herewith, of letters patent of the United States No. 1,262,860, to said Smith dated April 16th, 1918, for Incubator, of letters patent of the United States No. 1,263,138 to said Smith, dated April 16th, 1916, for Incubator, and of letters patent of the United States No. 1,543,130 to said Smith, dated June 23rd, 1925, for Incubator and the inventions thereof and each of them.

In Consideration of One Dollar ($1.00) in hand paid, and [fol. 997] other valuable considerations, does hereby give and grant unto The Buckeye Incubator Company, a corporation of the State of Ohio, having an office and place of business at Springfield, Ohio, its successors and assigns, the full and exclusive right, liberty and license to make, use and sell in and throughout the United States and the territories and possessions thereof incubators embodying the inventions shown described and claimed in said letters patent and each of them, and any improvements now or hereafter owned by the Licensor.

Provided, however, that it is mutually understood and agreed that:

The exclusive license hereby granted is limited to and includes only incubators in which the total egg and chick holding capacity of all trays of whatsoever character including such incubating, hatching, and nursery trays as may be placed in the incubator, shall not exceed sixteen thousand five hundred (16,500) eggs (meaning ordinary hen eggs as commonly understood in the trade and by the parties hereto) and that this license hereby granted is subject to and is under the provisions as to royalties, limitations, etc., and the provisions as contained in a certain agreement of even date between said Smith and said Company, to which agreement reference is hereby made, and the same so far as applicable hereto is made part hereof to the same force and effect as though incorporated herewith.

It being understood and agreed also that the license hereby granted is for the balance of the term of said letters patent number 1,262,860 or until said patent No. 1,262,860 is terminated by decision of a proper court of last resort or [fol. 998] United States District Court holding the patent invalid unappealed from by the said licensor, his successors and assigns.

In Witness Whereof, the said Samuel B. Smith has hereunto set his hand this 29th day of April, 1927.

Samuel B. Smith.

---

PLAINTIFF'S EXHIBIT No. 34

Executed in Duplicate

Contract Between Samuel B. Smith and The Buckeye Incubator Company

This Agreement between Samuel B. Smith, of Cleveland, Ohio, and The Buckeye Incubator Company (an Ohio corporation hereinafter designated as the "Company"), having been entered into between said parties in lieu of and as a substitution for three (3) existing agreements between the same parties, dated, respectively, January 4th, 1917, March 9th, 1918 and January 2nd, 1923.

Witnesseth:

1

Patent Assignments and Licenses

The United States Letters Patent No. 1,262,860, No. 1,263,138 and No. 1,543,130, heretofore granted to said Smith and [fol. 999] under the provisions of the prior agreements assigned to said Company, shall be reassigned to said Smith, his heirs, or assigns, by proper and legal instruments of assignment, bearing even date herewith. Said Smith shall, by proper istruments of even date herewith, grant to said Company, its successors and assigns, the exclusive license to manufacture incubators under said United States and Canadian patents and any improvements thereunder, during the life of such of the patents as cover features which the Company embodies in the manufacture of its incubators and con-

tinues to use after the expiration of patent number 1,263,560 to a total tray capacity of sixteen thousand five hundred (16,500) eggs. The title to any foreign patents (corresponding to the above United States and Canadian patents) shall remain in the Company as at present.

2

Definition of "Incubator Capacity"

The term "incubator capacity" as used in this agreement shall be understood to mean the total tray capacity of the incubators, to-wit, the total egg-and-chick-holding capacity of all trays of whatsoever character as may be placed in the incubator, including incubating, hatching, and nursery trays.

In determining the capacity of the Company's incubators it is agreed by the parties hereto that the size and total area of the trays of the No. 7 incubator as now constructed by the Company is forty-one thousand nine hundred and sixty-four [fol. 1000] (41,964) square inches and has a total capacity of thirteen thousand eight hundred and twenty-four (13,824) eggs and that the size and total area of the trays of the No. 34 as now constructed by the Company is fifty thousand seven hundred and forty-three (50,743) square inches and has a total capacity of sixteen thousand one hundred and twenty-eight (16,128) eggs.

The standard of determination of "incubator capacity" of future models shall be upon the basis of three and nine hundredths (3.09) square inches tray area per egg; present models are not affected by this provision.

3

Royalties and Terms of Payment

The Company shall pay to said Smith a royalty of five per cent (5%) of the sale price upon all incubators manufactured, sold and shipped under said license, on all sizes less than the type known as the present Number Seven (No. 7) which has a tray capacity of thirteen thousand eight hundred and twenty-four (13,824) eggs. Upon such sizes less than said present Number Seven (No. 7) and generally known as the smaller sizes, the said five per cent (5%) royalty shall be paid upon the Company's list price less published discounts, and shall be due and payable quarterly

upon all incubators sold and shipped during the preceding quarter. The quarterly periods shall be considered as ending on the last day of January, April, July and October of each year, and remittance for accrued royalties shall be [fol. 1001] made on or before fifteen days after the end of each quarter.

The Company shall pay as royalty under said license upon any incubator of total tray capacity between thirteen thousand two hundred and fifty (13,250) eggs, and fourteen thousand (14,000) eggs the sum of One Hundred Dollars ($100.00) per machine sold and shipped; upon any incubator of a total tray capacity between fourteen thousand (14,000) eggs and fifteen thousand (15,000) eggs, the Company shall pay as royalty One Hundred and Twenty-five Dollars ($125.00) per machine sold and shipped; upon any incubator having a total tray capacity in excess of fifteen thousand (15,000) eggs, and up to and including a total tray capacity of sixteen thousand five hundred (16,500) eggs, a royalty of one hundred and fifty dollars ($150.00) per machine sold and shipped. Payments of said last named flat royalties covering incubators having a total capacity of thirteen thousand eight hundred and twenty-four (13,824) eggs and over shall be made quarterly as above provided in the case of the percentage royalties. The Company agrees to notify Smith in writing of any change in the retail prices of its incubators at the time such change is made known to the public and becomes effective.

All payments of royalties shall be accompanied by an itemized statement attested by a duly authorized officer of the Company, giving the dates of sale, purchasers' names and addresses, sizes and types of incubators and prices at which same are sold and licensor or his duly authorized agent shall have the right to verify said statements by an inspection of licensee's books of account pertaining thereto [fol. 1002] upon reasonable notice. Any royalties not paid when due shall bear interest at the rate of six per cent (6%) per annum. The scale of royalties herein provided shall become effective May 1st, 1927. The scale of royalties for all incubators sold and shipped prior to May 1st, 1927, shall be the same as now in force and as set forth in the agreement of January 2nd, 1923, and nothing in this contract shall be considered as relieving the Company from paying the accrued royalties from incubators sold and shipped

prior to May 1st, 1927. In the case of machines which may have been sold prior to May 1st, 1927, but are not shipped until or after May 1st, 1927, it is understood and agreed that the above provided new scale of royalties shall apply and be paid.

4

Limitation of Manufacture of Other Sizes

Said Smith agrees, for himself, his heirs, and assigns, not to make, use or sell, or permit to be made, used or sold by others than the Company under said patents, any incubators of a total capacity up to twenty-five thousand (25,000) eggs; it being understood that the said Smith retains his exclusive rights for making, using and selling incubators having a total capacity of twenty-five thousand (25,000) eggs and over. The Company, for itself, its successors and assigns, agrees not to make, use or sell, or permit to be made, used or sold by others any incubators under said patents of a total capacity between sixteen thousand five hundred (16,500) eggs and twenty-five thousand (25,000) eggs. It is the [fol. 1003] purpose and intent of this agreement that the Company shall hereafter in the United States and Canada, have the exclusive right to manufacture incubators under said patents up to and including a capacity of sixteen thousand five hundred (16,500) eggs, and said Smith shall have the exclusive right to manufacture incubators under said patents with a total capacity of twenty-five thousand (25,000) eggs and over; and that in the zone between sixteen thousand five hundred (16,500) egg capacity and twenty-five thousand (25,000) egg capacity, neither of the parties hereto shall make, use or sell, or permit to be made, used or sold, incubators under said patents.

5

Infringement

Said Smith shall have the right to and shall prosecute all infringers, shall pay all the expense of such prosecution and shall receive all recoveries therefrom, except as to pending suits in which the Company shall have incurred expense, in which cases the expense shal be reimbursed to the Company from any recoveries from said suits. In the

event said Smith shall not, upon request of the Company, prosecute infringers, the Company shall have the right to prosecute them, and to join the said Smith as the owner of said patents in such prosecution and in such event the Company shall be entitled to all recoveries and shall pay all expense. It is understood that any attempt of a customer to increase the egg capacity of any incubator beyond sixteen thousand five hundred (16,500) eggs shall be a matter of mutual concern and interest to both parties hereto, and [fol. 1004] shall be considered an infringement by such customer of the license granted by said Smith, and said Smith shall have the right to prosecute such customer for such infringement, in which prosecution the Company shall render all necessary assistance at the expense of said Smith.

6

Default

Should the Licensee at any time default in the payment of the royalties herein called for, Licensor will so notify it in writing and should Licensee fail for sixty (60) days after receipt of such notice to pay said royalties Licensor at its option may declare this contract terminated and avoided.

Should Licensor at any time claim that Licensee had breached this contract by manufacturing or selling under this license incubators of greater capacity than sixteen thousand five hundred (16,500) eggs (as herein defined) it shall give written notice of such alleged default to Licensee. Within thirty (30) days after receipt of such notice Licensee may request arbitration of the question involved. Such arbitration shall be held pursuant to the provisions of the United States Arbitration Act approved February 12th, 1925, and the award shall be made by three arbitrators, one to be chosen by each of the parties hereto within ten (10) days from receipt of notice of request for arbitration and the third to be chosen by the two within twenty (20) days. If the two arbitrators selected by the parties cannot within twenty days (20) agree upon a third arbitrator he shall be chosen by the Chief Justice of the Ohio Supreme Court.

[fol. 1005] The award of such arbitrators shall be final and binding upon the parties. If the arbitrators find such a breach of this contract to have been committed by the Licensee they shall fix the amount of the damages resultant therefrom to the Licensor and shall further order a discontinuance of the manufacture and sale of such offending incubators. Licensee shall thereupon have ninety (90) days' time in which to pay the damages so awarded and to discontinue the manufacture and sale of such offending incubators; and if said Licensee shall fail to do either then the Licensor may declare this contract terminated and voided. But such arbitration, award, and non-compliance therewith for ninety (90) days are expressly made conditions precedent to Licensor's right to terminate this contract.

Should either party hereto claim that the other party has breached this contract in any other respect than above noted, the party so claiming shall give written notice of such alleged default to the other party, who, within thirty (30) days after the receipt of such notice, may request arbitration of the question involved. Such arbitration shall be conducted in all resjects as above provided.

The award of such arbitrators upon such question shall be final and binding upon the parties. If they find a breach of the contract to have been committed they shall fix and determine the amount of damages resultant to the injured party therefrom; and they shall further order such breach to be discontinued. Thereupon the offending party shall have ninety (90) days' time in which to pay said damages and to discontinue such breach and if they faid to do so [fol. 1006] within said period then the injured party may declare this contract terminated. But such arbitration, award, and non-compliance therewith for ninety (90) days are expressly made conditions precedent to said injured party's right to terminate this contract.

7

Release of Mutual Claims

This agreement having been entered into among other things for the purpose of mutually settling any pending controversies between the parties hereto, it is understood that said Smith releases the Company from all claims for damages for violation of prior contracts or infringements,

and releases any claims against any customers of said Company except as to claims based on unauthorized structural changes made by a customer. It being understood that by this contract all claims of either party against the other to this date are mutually released and discharged, except accrued royalties which may not have been paid.

This Agreement Shall Inure to the Benefit of and be Binding upon the heirs, administrators, executors, trustees, successors and asigns of the parties hereto, even where the same has not been herein specifically provided.

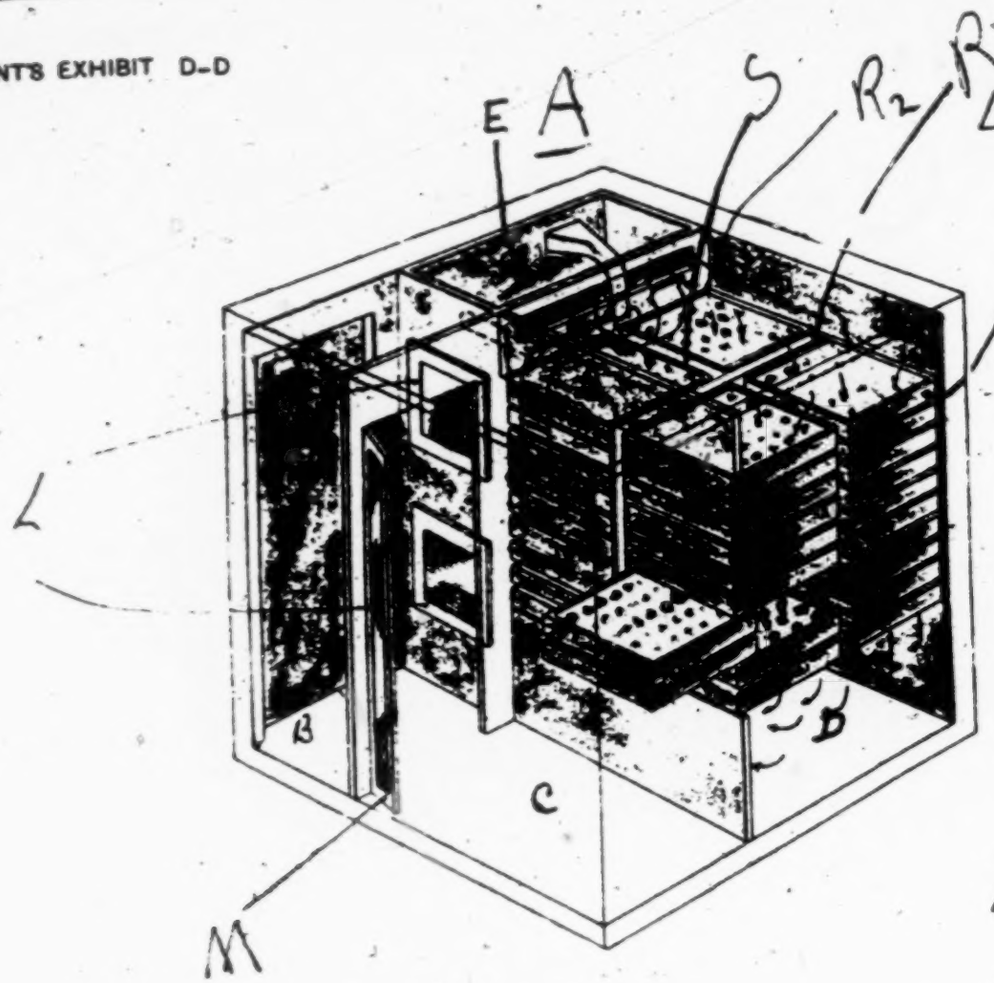
Dated at Columbus, Ohio, this 29th day of April, A. D. 1927.

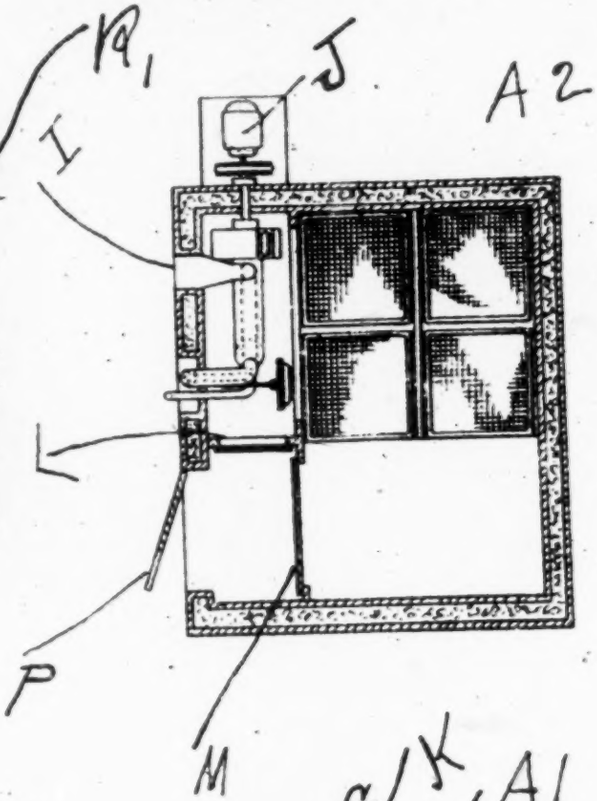
Samuel B. Smith, The Buckeye Incubator Company,
by A. R. Hill, Pres., R. A. Essex, Secy.

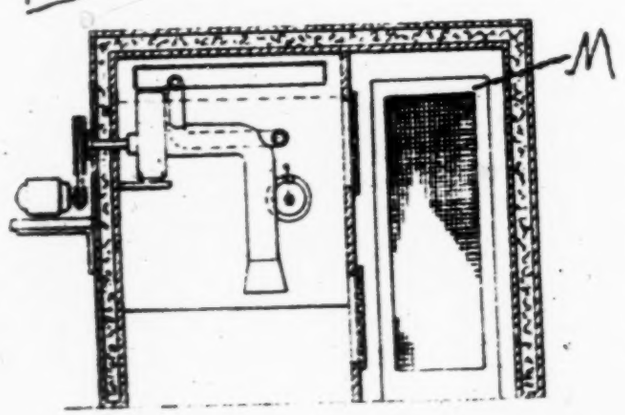
DEFENDANT'S EXHIBIT D-D

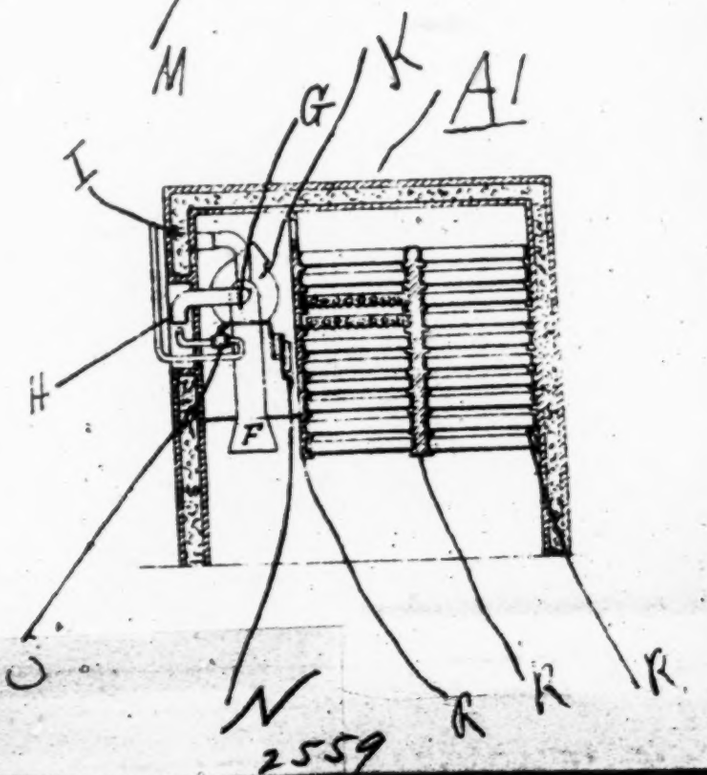
1007
PLAINTIFF'S EXHIBIT I

Davis Hatchery of 1910
Brooklyn N.Y.



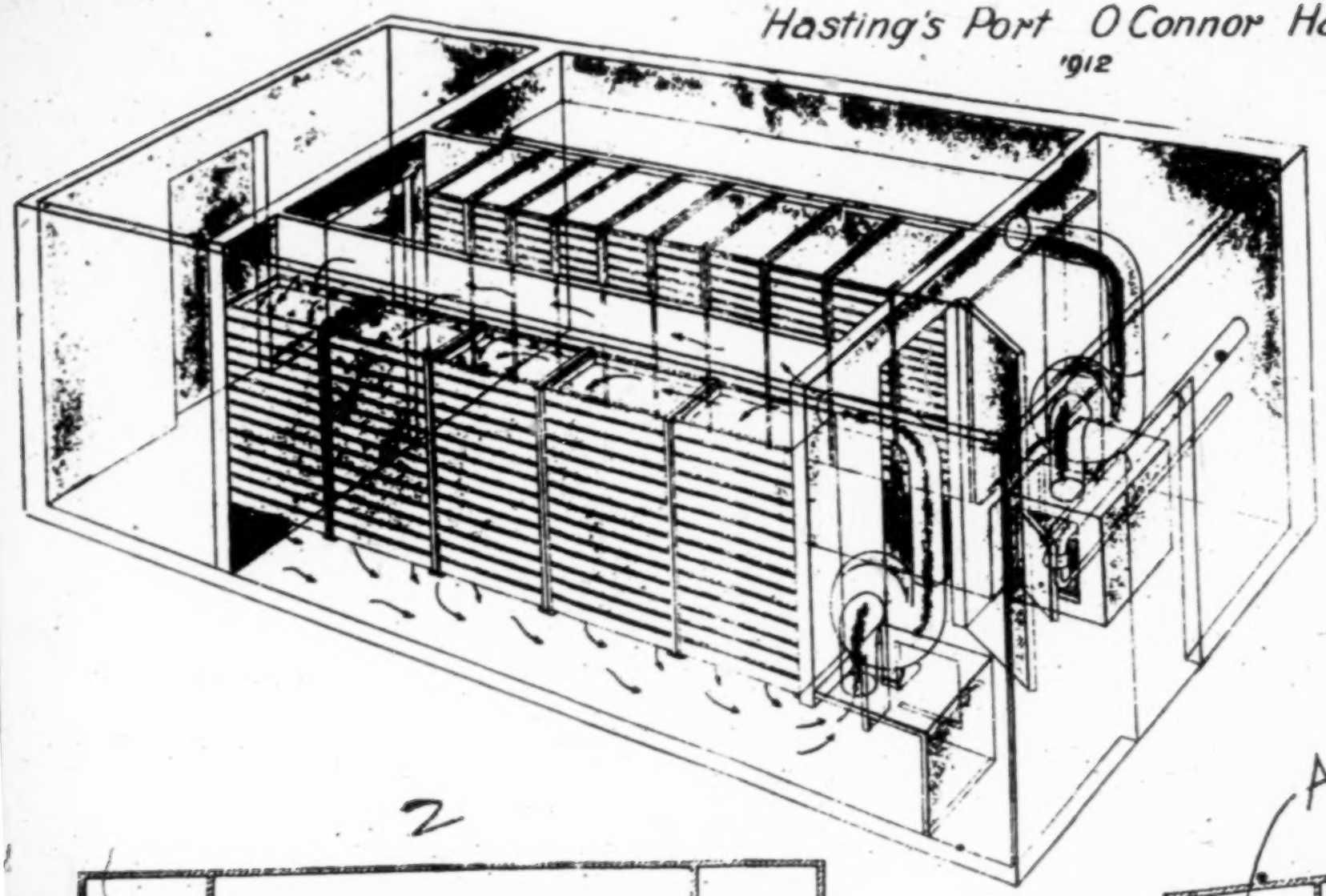

2559

DEFENDANT'S EXHIBIT D-H

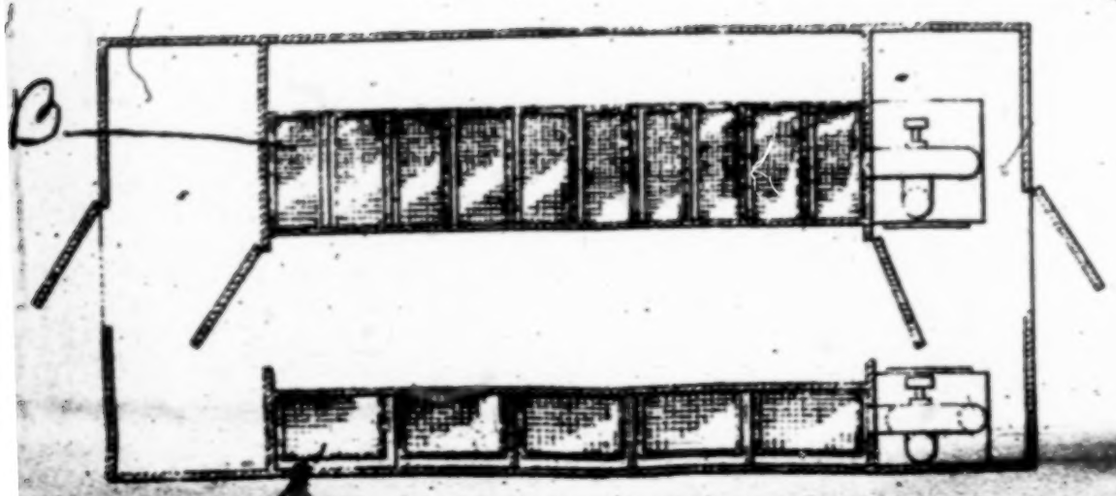
1008
PLAINTIFF'S EXHIBIT

Hasting's Port O Connor Hatchery

1912



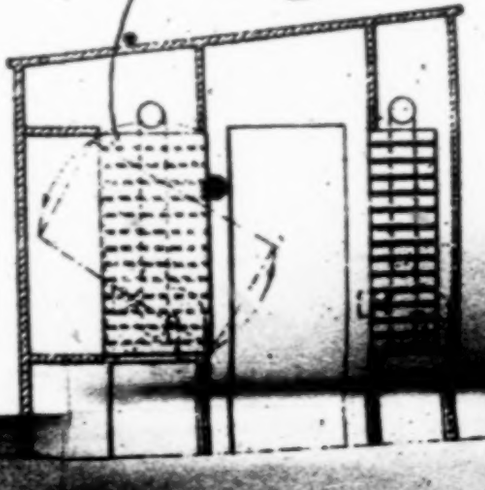
2



B

A

3



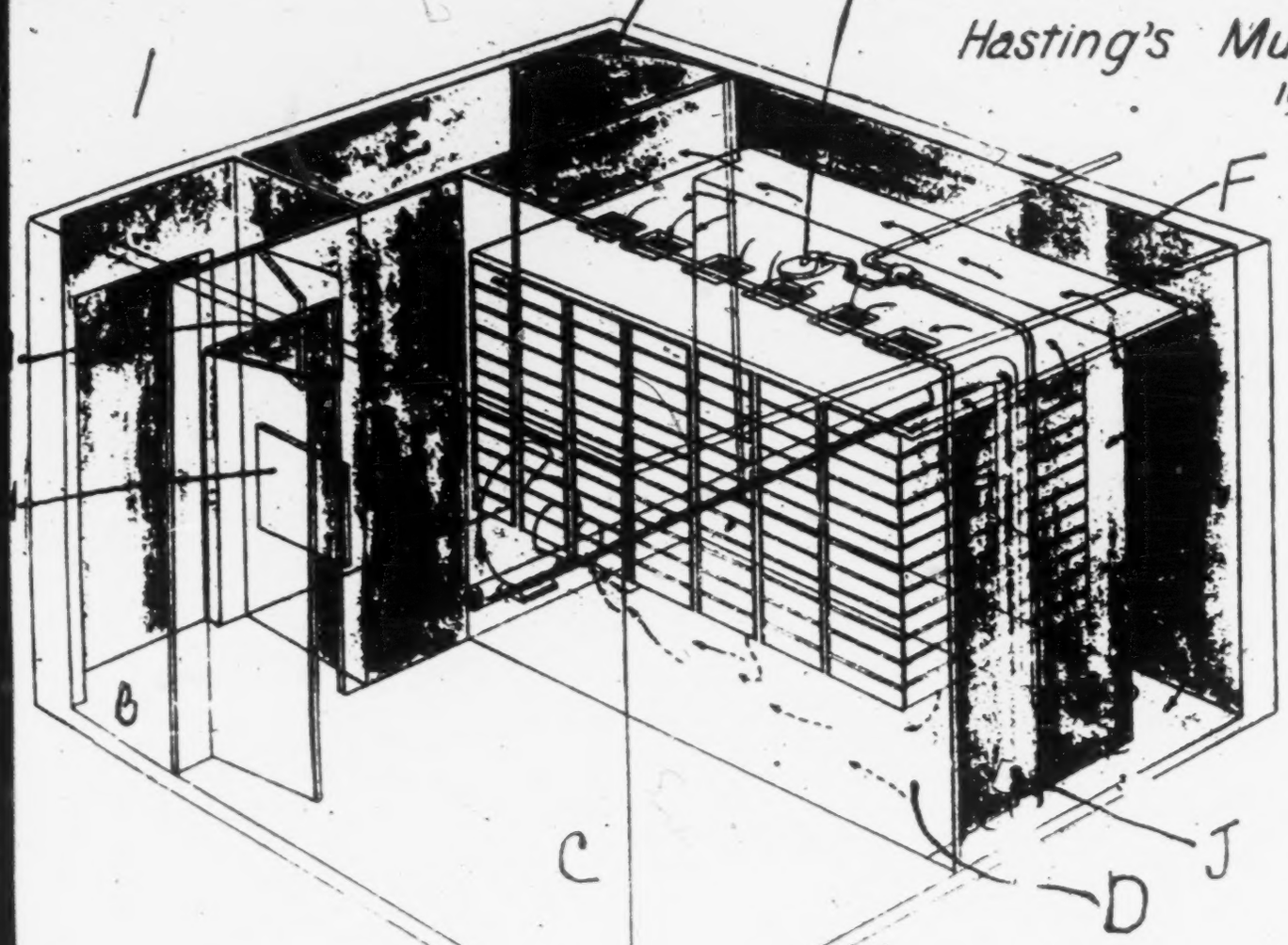
DEFENDANT'S EXHIBIT D-J

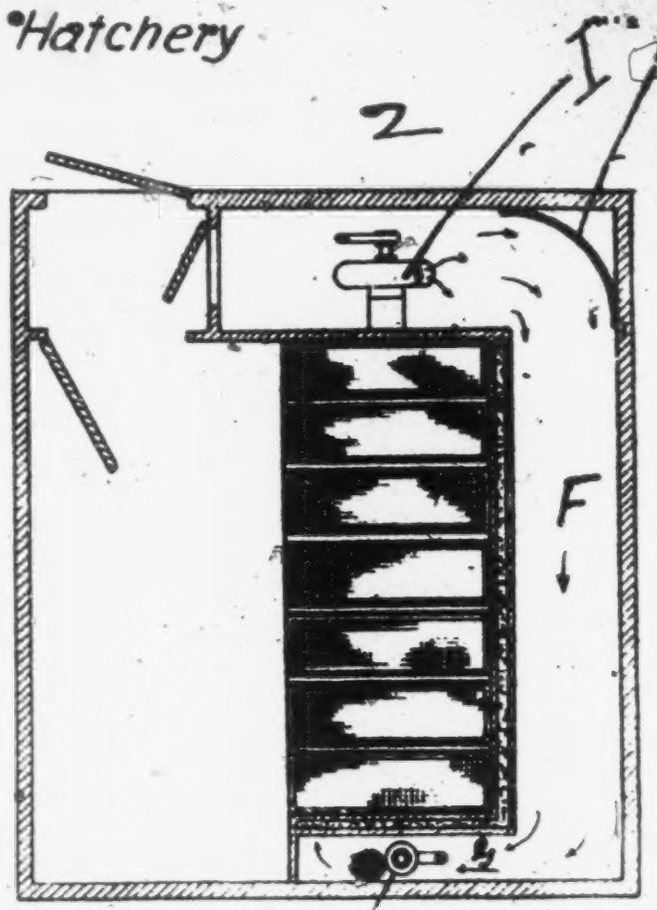
1009

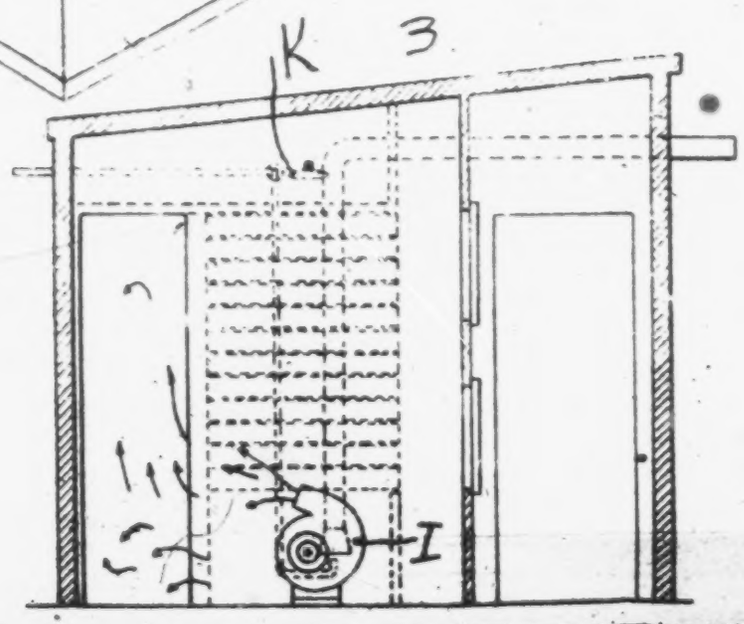
PLAINTIFF'S EXHIBIT 1

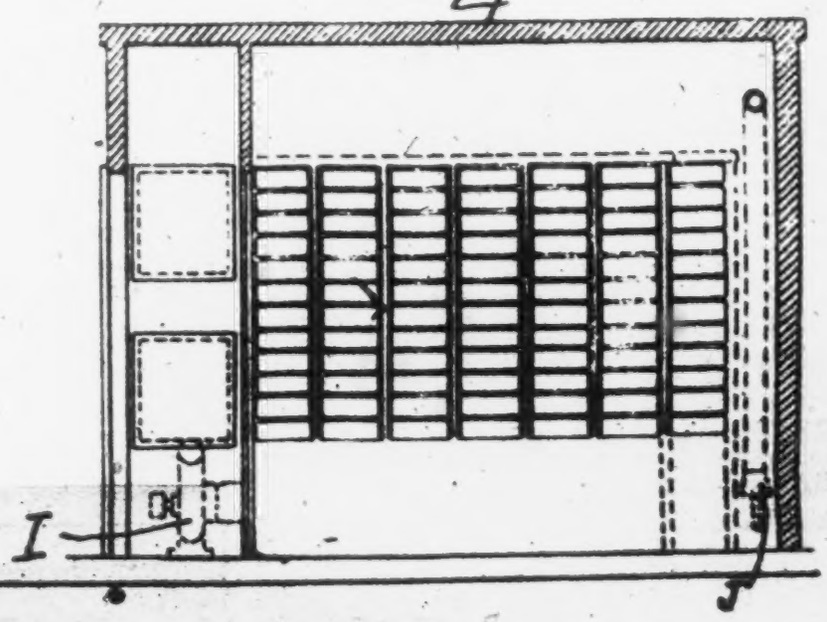
# Hasting's Muskogee Hatchery

1911 - 2



PLAINTIFF'S EXHIBIT I

ENDANT'S EXHIBIT D E

DEPARTMENT OF COMMERCE

PATENT OFFICE

*To all persons to whom these presents shall come, Greeting:*

S TO CERTIFY that the annexed is a true copy from the records of this office of the File Wrapper, Contents and Drawing, the matter of the

Abandoned Application of

Milo Hastings,

Filed May 5, 1911, Serial Number 624,885,

for

provement in Hatchery for the Eggs of Domestic Fowl.

In Testimony Whereof I have hereunto set my hand and caused the seal of the Patent Office to be affixed, at the City of Washington, this third day of October in the year of our Lord, one thousand nine hundred and twenty-five and of the Independence of the United States of America the one hundred and fiftieth.

Chief of Division. Thomas E. Robertson Commissioner of Patents.

1010

728

DIV. 38 | 1911 | (EXT'S BOOK) 14/2 - C

NUMBER (Series of 1900).

624885 PATENT No.

Name Mils Hastings

Assor to Hastings Corporation, of New York, N.Y. a corp. of New York

of Brooklyn.

County of

State of New York

Invention Hatchery for the Eggs of Domestic Fowl.

| PARTS OF APPLICATION FILED | ORIGINAL | | RENEWED | |
|---|---|---|---|---|
| Petition | April 25 | 1911 | | 191 |
| Affidavit | " " | 1911 | | 191 |
| Specification | May 3 | 1911 | | 191 |
| Drawing | Apr 25 | 1911 | | 191 |
| Model or Specimen | | 191 | | 191 |
| First Fee Cash | $15. Apr. 28 | 1911 | | 191 |
| " " Cert | | 191 | | 191 |
| Appl. filed complete | May 3 | 1911 | | 191 |

Examined

Allowed

| | For Commissioner. | | For Commissioner. |
|---|---|---|---|
| Notice of Allowance | 191 | | 191 |
| Final Fee Cash | 191 | | 191 |
| " " Cert | 191 | | 191 |

Patented 191

Attorney Church & Church — Wash. D.C.

Associate Attorney

(No. of Claims Allowed ) Title as Allowed

3 —

F/2

Division of App., No. , filed , 191

1011

DEPARTMENT OF THE INTERIOR
UNITED STATES PATENT OFFICE
WASHINGTON

April 25, 1911.

Mr. Milo Hastings,
Kings Highway & E. 23rd Street,
Brooklyn, N. Y.

Sir:

The incomplete money order for $15.00 received with the application of Milo Hastings, is herewith returned as same cannot be accepted by this Office.

Upon receipt of complete money order the same will be applied as directed.

Respectfully,

A. L. Pope
Acting Chief Clerk.

Enclosure.

1012

730

# PETITION.

[FROM RULES OF PRACTICE, U. S. PATENT OFFICE, PAGE 60, FORM 4.]

To the Commissioner of Patents:

Your petitioner, Mike Hastings

citizen subject, of the United States

and resident of Brooklyn

in the county of Kings and State of New York

whose post-office address is (or are) Kings Highway and E. 23d Street

prays that Letters Patent may be granted to him

for the improvement in a hatchery for the eggs of domestic fowl

as set forth in the annexed specification

And hereby appoint*

of , State of , , attorney,

with full power of substitution and revocation, to prosecute this application, to make alterations and amendments therein, to receive the patent, and to transact all business in the Patent Office connected therewith.

Signed at Brooklyn in the County of Kings, and State of New York, this 5th day of April, 1912

Inventor's full name: Mike Hastings

* If no power of attorney is given, the full name of each inventor of the firm must be inserted, or it will be granted to

Note.—In the case of the assignment of the whole interest in the invention, the petition and oath must be made by the assignee, if alive, even if the patent is to issue to an assignee. If the inventor is dead, it may be made by the executor or administrator; if insane, by the guardian, conservator, or legal representative.

1013

SPECIFICATION.

To all whom it may concern;

Be it known that I, Milo Hastings, a citizen of the United States, residing at Brooklyn, in the county of Kings, and the state of New York, have invented a new and useful hatchery for the eggs of domestic fowl, of which the following is a specification:

My invention is that of a hatchery in which I secure better ventilation and a more uniform temperature throughout the hatching chamber by substituting a forced draft for gravity drafts.

I attained this end by the mechanism illustrated in the accompanying drawing. This represents a ~~vertical~~ section of the hatchery, in which A is a hatching chamber wherein are placed the eggs, B is an electric fan which is to run constantly, maintaining a steady current of air through the hatching chamber, C is a heater, D any uniform or regulated source of heat. I use a gas flame, the pressure of which is controlled by a governor, EE ar fabrics or perforated partitions for the purpose of causing an even horizontal distribution of air throughout the hatching chamber.

I believe it to be best to cause the air to enter the hatching chamber from above, but my invention is not limited to any particular circulation or movement of the air and by the use of the fan, the gravity drafts may be overcome and the air caused to move in any desired direction.

1014

Ventilation I secure through cracks around the door of the hatching chamber or other small openings in any part of the air circuit. The air being constantly in motion, requires less rejuvenation than dead air.

The part of my apparatus that is new, and which has not before been used in connection with hatching devices, is that of the fan, and this I maintain to be of distinct utility in securing uniform ventilation and an even temperature throughout all parts of the hatching chamber.

I claim: The combination in a hatchery for the eggs of domestic fowl, of a ~~room or~~ chamber for holding eggs to be incubated and a ~~fan, pump, or~~ other mechanical device with moving parts for causing a circulation of air in or through such chamber.

Milo Hastings

Witnesses: Edgar Chamberlain
Jeannette Loben

1015

# OATH

To accompany an application for United States Patent.

Mils Hastings
Insert name

the above-named petitioner, being sworn (or affirmed), depose and say that he is a citizen of the United States

and resident of King's Highway and E. 23d Street, Brooklyn New York

, that he verily believes himself to be the original, first, and sole inventor of the improvement in a hatchery for the eggs of domestic fowl described and claimed in the annexed specification; that he does not know and does not believe that the same was ever known or used before his invention or discovery thereof, or patented or described in any printed publication in any country before his invention or discovery thereof, or more than two years prior to this application, or in public use or on sale in the United States for more than two years prior to this application; that said invention has not been patented in any country foreign to the United States on an application filed by him or his legal representatives or assigns more than twelve months prior to this application; and that no application for patent on said improvement has been filed by him or his representatives or assigns in any country foreign to the United States, except as follows:

Oath filed
4/24/11

Inventor's full name: Mils Hastings

Sworn to and subscribed before me this 20th day of April, 1911

J. P. Gannon
(Signature of justice or notary.)

Notary Public # 8
(Official character.)

[2241.]

1. If the inventor be dead, the oath will be made by the administrator; if insane, by the guardian, conservator, or legal representative. In either case the affiant will declare his belief that the party named as inventor was the original and first inventor.
2. If the applicant be an alien, state of what foreign country he is a citizen or subject.
3. Give residence address in full; as "a resident of ——, in the county of —— and State of ——," or "of No. —— street, in the city of ——, county of —— and State (Kingdom, Republic or Empire) of ——."
4. "Sole" or "joint."
5. Insertion of invention.
6. Name each country in which an application has been filed, and in each case give date of filing the same. If no application has been filed, scratch the words "except as follows."
7. All oaths must bear the signature of the affiant.
8. * * * "When the person before whom the oath or affirmation is made is not provided with a seal, his official character shall be established by competent evidence, as by a certificate from a clerk of a court of record or other proper officer having a seal."
A certificate of the official character of a magistrate, stating date of appointment and term of office, may be filed in the Patent Office, which will obviate the necessity of separate certificates in individual cases.
When the oath is taken abroad before a notary public, judge, or magistrate, his authority should in each instance be proved by a certificate of a diplomatic or consular officer of the United States.

734

CBA

DEPARTMENT OF THE INTERIOR

UNITED STATES PATENT OFFICE

WASHINGTON

April 28, 1911.

Sir:

I have to acknowledge the receipt of your informal application for patent, the title of which is improvement in Hatchery for the Eggs of Domestic Fowls.

This application is informal because you have failed to sign the specification, when signed, your signature must be attested by two witnesses, papers are accordingly returned herewith.

The government filing fee of $15 is also required.

This application must be completed within one year from the above date.

Very respectfully,

E. B. Williams

Commissioner of Patents.

Milo Hastings,
Kings Highway & E. 23rd St.,
Brooklyn, N.Y.

---

Note.—In order to constitute an application for a patent, the inventor is by law required to furnish his petition, specification, oath, and drawings (where the nature of the case admits of drawings) and to pay the required fee.

No application is considered complete, nor can any official action be had thereon, until all the parts, as here specified, are furnished in due form by the inventor or applicant.

Insert name at top & seal.

1017

Div. [illegible] Room 378 MMD [illegible] LDH Paper No. 2 735

Address only "The Commissioner of Patents, Washington, D. C."

All communications respecting this application should give the serial number, date of filing, and title of invention.

DEPARTMENT OF THE INTERIOR

UNITED STATES PATENT OFFICE

WASHINGTON May 26, 1912.

Milo Hastings,

King's Highway and E. 23rd St.,

Brooklyn, N.Y.

*Please find below a communication from the EXAMINER in charge of your application.*

Ser. No. 624,885, filed May 3, 1911: Hatchery for the Eggs of Domestic Fowl.

E. B. Moore,
Commissioner of Patents.

---

Since the oath filed bears no venue, applicant must either file a new oath in proper form or else furnish a certificate from the notary who administered the oath, in accordance with the practice recited in ex parte Delavoye, 124 O.G., 626.

In line 14 of page 1 the word "vertical" is misspelled. In line 15 the words -"the eggs" should be canceled and inserted before "are".

The claim is informal as being alternative in form and applicant should cancel the words "room or" in line 2 and the phrase "or.....moving parts".

The claim is rejected on

Hawkins, 725,079, April 14, 1903,
Class 43, X-ref. or
Osborne, 886,325, April 28, 1908,

It is considered that applicant's arrangement is merely the double use of the arrangement there shown and that there is no particular combination between the forced draft and an incubator since various forms of natural draft passages are shown in the well known forms of incubator.

G. B. Ide,
Exr.

[illegible]

1116

736

MILO HASTINGS
134 E. 39th ST
NEW YORK CITY

624,885 filed

June 19, 1911.

Commissioner of Patents,

Washington, D.C.

Sir:

Refering to paper No. 2, Ser. No. 624,885, filed May 8, 1911: Hatchery for the Eggs of Domestic Fowl—

If you will send me an additional blank, I will file a new oath as suggested.

I authorize you to correct the spelling of the word "vertical" in line 14, and to transfer the words "the eggs" inserting same before "are" in line 15, page 1 of the specification.

I authorize you to eliminate the alternative features of the claim by striking out the words "room or" in line two and the words "fan, pump, or other" in lines three and four.

I maintain that the rejection on
Hawkins, 725,079, April 14, 1903,
Osborne, 886,325, April 28, 1908,
is beside the point. These patents refer to the use of forced ventilation for purposes unrelated to incubation. The use of a forced draft in combination with an incubator I contend to be patentable, as it is a distinctly new use of a well known mechanical device, which in its new use required invention to reach and which has distinct utility.

To contend that the new use is not patentable because passages for natural drafts exist in well known types of incubators is unsound; thousands of well known patents including the two cited by your examiner would be thrown out by a similar line of reasoning. There are scores of existing incubator patents based upon the form of these natural draft passages, and I maintain that the introduction of a device for generating a force draft to be of far greater uniqueness and utility than the varying designs for utilising natural drafts.

For the reasons above given, I beg for a re-examination of my application.

Respectfully yours,

Milo Hastings

1019

Div. 32 Room 378
Address only
"The Commissioner of Patents,
Washington, D. C."

Paper No. 4
All communications respecting this application should give the serial number, date of filing, and title of invention.

DEPARTMENT OF THE INTERIOR
UNITED STATES PATENT OFFICE
WASHINGTON

July 15, 1911.

Milo Hastings,

Kings Highway and East 23rd Street,

New York, N. Y.

*Please find below a communication from the EXAMINER in charge of your application.*

Ser. No. 624,885, filed May 23, 1911, for Hatchery for the Eggs of Domestic Fowl.

E. B. Moore,
Commissioner of Patents.

In response to the communication filed June 20, 1911.

A blank for the new Oath required is herewith enclosed.

The claim is again rejected on Hawkins or Osborne of record for the reasons stated. This rejection is made final under the decision in Ex parte Miller, 139 O. G. 730 and applicant's appeal lies to the Board of Examiners-in-Chief.

G. R. Ide,
Ex.

1020

738

MILO HASTINGS
134 E. 39th ST
NEW YORK CITY

624,885 5
Oath

July 22 19

Commissioner of Patents
Washington D.C.

Sir:

Inclosed is a new oath for Application 624,885, filed May 3, 1911 - Hatching for the Eggs of Domestic Fowl. as per your communication of May 26, 191

Respectfully yours
Milo Hastings

1021

# OATH.

To accompany an application for United States Patent.

EXPATENT OFFICE

State of New York
County of New York } ss:
Milo Hastings

the above-named petitioner, being sworn (or affirmed), deposes and says that he is a citizen of the United States of America[1]

and resident of[2] Kings Highway and East 23d street in the Borough of Brooklyn City of New York, county of Kings, state of New York, that he verily believes himself to be the original, first, and[3] sole inventor of the improvement in[4] A hatchery for the eggs of domestic fowl described and claimed in the annexed specification; that he does not know and does not believe that the same was ever known or used before his invention or discovery thereof, or patented or described in any printed publication in any country before his invention or discovery thereof, or more than two years prior to this application, or in public use or on sale in the United States for more than two years prior to this application; that said invention has not been patented in any country foreign to the United States on an application filed by him or his legal representatives or assigns more than twelve months prior to this application; and that no application for patent on said improvement has been filed by him or his representatives or assigns in any country foreign to the United States, except as follows:[5]

(Be acknowledgment may be made by any attorney appearing in the case.)

Inventor's full name: Milo Hastings

Sworn to and subscribed before me this 21st day of July, 1911

J. P. Gannon
(Signature of justice or notary.)
Notary Public # 8
~~[illegible]~~ New York

1. If the inventor be dead, the oath will be made by the administrator; if insane, by the guardian, conservator, or legal representative. In either case the affiant will declare his belief that the party named as inventor was the original and first inventor.
2. If the applicant be an alien, cancel "the United States of America," and state of what foreign country he is a citizen or subject.
3. Give residence address in full; as "a resident of ——, in the county of ——, and State of ——," or "of No. —— street, in the city of [illegible] county of ——, and State (Kingdom, Republic, or Empire) of ——."
4. "Sole" or "joint."
5. Insert title of invention.
6. Name each country in which an application has been filed, and in each case give date of filing the same. If no application has been filed, erase the words "except as follows."
7. Call with most bear the signature of the affiant.
8. * * * "When the person before whom the oath or affirmation is made is not provided with a seal, his official character shall be established by competent evidence, as by a certificate from a clerk of a court of record or other proper officer having a seal."
9. If the application papers must be attached together with a ribbon or tape, the ends of which must be brought together under the seal before the letter is affixed and impressed; or, each sheet must be impressed with seal, or initialed by the officer. The drawing must not be attached to the papers.
When the oath is taken abroad before a notary public, judge, or magistrate, his authority should in each instance be proved by a certificate of a diplomatic or consular officer of the United States.

740

Address only "The Commissioner of Patents, Washington, D. C." 378 LDH Paper No. 6

All communications regarding this application should give the serial number, date of filing, and title of invention.

DEPARTMENT OF THE INTERIOR

UNITED STATES PATENT OFFICE

WASHINGTON Aug. 14, 1911.

Milo Hastings,

Kings Highway and 23rd St.,

Brooklyn, N.Y.

*Please find below a communication from the EXAMINER in charge of your application.*

Ser. No. 624,885. Filed May 3, 1911: Hatchery for the Eggs of Domestic Fowl.

E. B. Moore

Commissioner of Patents.

---

In response to the communication filed July 24, 1911:

The new oath required has been received.

The application stands under final rejection of the date of July 15, 1911, and periods within which applicant must act will commence with that date.

G. R. Ide

Ex.

1023

Pow Atty

Hon. Commissioner of Patents,

Sir:

I hereby appoint Messrs. Church & Church ( a firm composed of Melville Church and Joseph B. Church) of Washington, D. C., as my attorneys in the matter of my application Serial No. 634,885, filed May 3, 1911, Improvements in Hatcheries for the Eggs of Domestic Fowl, with full power of substitution and revocation, to prosecute said application, to make alterations and amendments therein, to receive the patent and to transact all business in the Patent Office connected therewith.

Milo Hastings

1024

742

IN THE UNITED STATES PATENT OFFICE.

Milo Hastings;

Hatchery for Eggs of Domestic Fowl;

Filed May 3, 1911;

Serial No. 624,885.

BOOK 278

Hon. Commissioner of Patents,

Sir:-

In reply to Office letter of July 18, 1911. The present attorneys have but recently been called into this case, and after a careful consideration of the application, together with a mass of data and information derived from a practical hatchery of large capacity which is being operated by the applicant, they are of the opinion that the invention has not been fully comprehended by the Examiner, due, perhaps, largely to the lack of skill of the applicant himself in the handling of applications for patents, or to his lack of knowledge as to the points which should be presented for the Examiner's consideration.

For this reason we have to request that the case be further considered in connection with the claim presented herein, and that said claim be entered as a substitute for the present claim, a course which we believe is justifiable under the circumstances, although we also request that, if the Examiner does not feel at liberty to re-examine the application, the claim be entered for the purposes of appeal.

Please amend the case by canceling the present claim and substituting the following therefor:

1025

"A hatchery for eggs embodying an incubating chamber adapted for the reception of superposed trays for eggs to be incubated, whereby said eggs will be arranged in layers one above the other, means for effecting a distribution of air uniformly to the eggs in the chamber, means for heating the air, and mechanically operated means for forcing a uniform circulation of air through all parts of the chamber and past the heater, whereby convexion currents will be eliminated, temperature and gaseous stratification of the air in the chamber overcome, and the eggs subjected to the influence of air of the same temperature and composition."

REMARKS.

The problem presented to applicant was one which finds no analogy in the small incubators such as are commonly used throughout the country, for in them the chamber is of such small size and the eggs located so close together in a vertical direction that the disturbing influences due to convexion currents and air stratification amount to nothing. It is well known that eggs during the process of incubation exert a very marked influence on the air surrounding them, as the temperature of the eggs themselves varies in accordance with the stage of their development and the gaseous emanations tend to produce vitiated conditions which exert a marked influence upon the eggs themselves, and especially upon adjacent eggs, if the eggs are at different stages of their development. The eggs themselves thus produce both temperature and gaseous stratification of the air in the chamber, but this is easily overcome in a small incubator by ordinary convexion currents such as are set up by the heater or by the temperature of the eggs themselves, but in

a large hatchery where many hundreds, and even thousands, of eggs are being continually advanced in the process of incubation the ordinary means for causing the circulation of air by convexion currents through and in the incubating chamber has been demonstrated as being totally inadequate, and this is believed to be one of the principal reasons why, up to the present time, hatcheries of large capacity have proven to be practical failures, except, perhaps, in a few isolated instances, where natural temperature and moisture conditions of the whole atmosphere have been exceptionally favorable. Applicant's invention, on the other hand, provides a means whereby success is practically assured, regardless of the location of the hatchery, and such success is believed to be due to the fact that, he has by a painstaking and very costly series of experiments discovered that the temperature and gaseous stratification in the incubating chamber must be overcome by a mechanically forced circulation of the air which will insure a correct and uniform influence of the air upon all of the eggs in the incubating chamber, and this forced circulation must be such as to overcome the counteracting influence of the eggs upon the air when said eggs are in the different stages of incubation. This feature has seemingly never been effectually worked out by investigators along this line prior to applicant, and it seems to the attorneys to present all of the characteristics of a patentable invention of the highest order. The fact that air both heated and cooled has been forced into and through apartments and vehicles, such as railway cars, etc., does not suggest the idea of overcoming the difficulties encountered in the practical operation of incubators of large capacity, especially as the conditions which exist in such hatcheries have not

heretofore been adequately understood, and the remedies for the conditions as applied to incubators of small capacity were totally inadequate.

In view of the fact that, if this amendment is admitted for the purpose of appeal only, the appeal should be taken before the 15th of July, it is requested that the foregoing amendment and argument be considered promptly or in ample time for the appeal to be filed within the statutory time.

Respectfully,

MILO HASTINGS,

By Schmeck & Schmeck

His Attorneys.

May 24, 1912.

746

Div. 38 Room 378 MSD GJD Paper No. 9

Address: The Commissioner of Patents, Washington, D. C.

All communications respecting this application should give the serial number, date of filing, and title of invention.

DEPARTMENT OF THE INTERIOR

UNITED STATES PATENT OFFICE

WASHINGTON June 25, 1912.

Milo Hastings,

c/o Church and Church,

Wash. D. C.

Please find below a communication from the EXAMINER in charge of your application.

Ser. No. 624,885, filed May 3, 1911, for Hatchery for the Eggs of Domestic Fowl.

E. B. Moore,

Commissioner of Patents.

In response to the communication filed May 24, 1912.

The claim presented by the amendment of the above date has been entered for the purposes of appeal. It is considered that the references of record are anticipations of this claim and the case stands under the final rejection of July 15, 1911.

G. R. Ice,

Ex.

1029

IN THE UNITED STATES PATENT OFFICE.

Milo Hastings;
Hatchery for Eggs of Domestic Fowl;
Filed May 3, 1911;
Serial No. 624,885.

ROOM 378.

---

APPEAL TO THE BOARD OF EXAMINERS-IN-CHIEF.

Hon. Commissioner of Patents,

Sir:

I hereby appeal to the Board of Examiners-in-Chief from the decision of the Primary Examiner, rejecting finally my above entitled application, and allege as ground therefor, that the Examiner erred in holding the claim presented by the amendment of May 24, 1912 to be anticipated by the references of record.

An oral hearing is requested.

Respectfully,

Milo Hastings,

By Church & Church

His Attorneys.

July 8, 1912.

1030

748

DEPARTMENT OF THE INTERIOR,

UNITED STATES PATENT OFFICE.

Washington, D. C. July 16, 1912.

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MED-LDH

In re application
Milo Hastings;
Ser. No. 624,885;
Filed May 3, 1911;
Hatchery for the Eggs of Domestic Fowl.

Before the
BOARD of EXAMINERS-in-CHIEF
on APPEAL.

Examiner's Statement.

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The claim rejected is -

A hatchery for eggs embodying an incubating chamber adapted for the reception of superposed trays for eggs to be incubated, whereby said eggs will be arranged in layers one above the other, means for effecting a distribution of air uniformly to the eggs in the chamber, means for heating the air, and mechanically operated means for forcing a uniform circulation of air through all parts of the chamber and past the heater, whereby convexion currents will be eliminated, temperature and gaseous stratification of the air in the chamber overcome, and the eggs subjected to the influence of air of the same temperature and composition.

The references cited are -

Hawkins, 725,079, April 14, 1903.
Osborne, 886,325, April 28, 1908.

In the device under consideration applicant has supplied an electric fan in an ordinary type of incubator, having an egg chamber and a suitable heater, in order to produce a forced circulation of air through all parts of the chamber.

The references, Hawkins and Osborne, were cited to show that it is old to use a mechanical means to produce a forced draft. The claim was rejected upon the ground that it involved merely the double use of the devices there shown and that applicant had only applied them to an old type of incubator such as shown by Day,

1031

Ser. No. 624,885.....2.
Ex'r's Statement.

789,719, May 16, 1905, wherein it is shown common to so arrange the device that a natural circulation of air will be produced by the change in temperature thereof. It has not been shown that any new results are obtained other than those always procured through the substitution of forced for natural draft.

It is therefore believed that the device is a most obvious example of the double use of an old apparatus and that the claim was properly rejected upon this ground.

Respectfully submitted,

G. R. Ide

Examiner, Division 38.

MMD

750

Copy

5385

DEPARTMENT OF THE INTERIOR
UNITED STATES PATENT OFFICE
WASHINGTON

July 19, 1912.

Sir:

The case of Milo Hastings

Serial ~~No.~~ No. 624885 will be heard by the ~~Commissioner~~ Examiners-in-Chief on the 23rd day of December 1912.

It is the ~~sixth~~ case on the assignment for that day.

The hearings will commence at ~~hour~~ one o'clock, and as soon as the argument in one case is concluded the succeeding case will be taken up.

If any party, or his attorney, shall not appear when the case is called, his right to an oral hearing will be regarded as waived.

The time allowed for arguments is as follows:

Ex parte cases, thirty minutes;
Motions, thirty minutes, each side;
Interference appeals, final hearing, one hour each side.

By special leave, obtained before the argument is commenced, the time may be extended.

The appellant shall have the right to open and conclude in interference cases, and in such case a full and fair opening must be made.

Briefs in interference appeals must be filed in accordance with the provisions of Rule 147.

Respectfully,

E. B. Moore

Commissioner of Patents.

To Church & Church Attys.
McGill Bldg.
Washington, D.C.

To .....

.....

.....

1033

UNITED STATES PATENT OFFICE.

In re application
Milo Hastings;
Serial No. 624,885;
Filed May 3, 1911;
Hatchery for the Eggs of Domestic Fowl.

Before the
BOARD OF EXAMINERS-in-CHIEF
on APPEAL.

---

BRIEF FOR APPLICANT.

The invention or discovery made by this applicant and which now seems so simple and obvious to the Primary Examiner is one which has only been developed as a result of years of study and effort. The problems confronting experimentors in the art of egg incubation have been studied from many different angles, some investigators holding the view that nature must be simulated in every possible way if satisfactory results are to be attained, and others believing that science can improve upon nature.

Many efforts have been made to carry on the incubation of eggs on an extensive scale, but as a rule such efforts have been unsuccessful, save in a few instances where climatic and atmospheric conditions have been exceptionally favorable (for example, the large incubating plants of Ancient Egypt). Other efforts to carry on incubation on an extensive scale have invariably failed, unless the operations have been sub-divided, so to speak, into a multiplicity of units, as, for example, by the

employment of a large number of relatively small incubators each practically independent of the other. The problem has been to enable the incubating operations to be carried on continuously, if so desired, with eggs at all stages of development, and with all of a vast number of eggs subjected to the same temperature and atmospheric conditions best adapted for the development of the embryo. An incubator such as is contemplated is in sharp contrast to the ordinary incubator in that it is designed to handle simultaneously hundreds of thousands of eggs and, therefore, requires a relatively large chamber for accommodating them. Plants actually constructed by applicant have been competent to handle from thirty thousand to one hundred and fifty thousand eggs and upwards at one time, for it is only by the handling of such large numbers of eggs that the expense of scientific handling and incubating operations can be reduced to a minimum.

In a small incubator holding from fifty to a few hundred eggs, the incubating chamber is of only a few cubic feet capacity and the eggs are almost invariably arranged in a single horizontal layer with which arrangement it becomes a comparatively simple matter to regulate the heat and moisture conditions, but should there be a failure to do so, the resultant loss would be quite insignificant. With a large hatchery, on the other hand, containing one hundred thousand eggs, for example, failure of a hatch would mean financial ruin. While these considerations do not enter into the questions of invention and patentability to any great extent, attention is

directed to them in order that the Board may appreciate the situation confronting one who undertakes to accomplish the seemingly simple results necessary for successful incubation.

During the incubating process the eggs themselves, especially if assembled in large numbers close together, exert a most marked influence upon the surrounding air, both with respect to temperature and composition, and owing to their inherent temperature changes, they exert a most marked influence upon adjacent eggs due to radiation. For example, during the initial stage of incubation, the eggs absorb heat whereby their temperature is raised, but during the final stages, the vital processes generate heat and in practice it is found that with vast numbers of eggs assembled in a single compartment and with eggs at all stages of incubation but very little extraneous heat need be supplied, because the eggs in the later stages of development supply the necessary heat for the eggs in the earlier stages of development. In practice, however, a source of heat is always maintained in order to permit of proper regulation.

Insofar as moisture conditions are concerned, it seems to be a problem of maintaining the atmosphere at the proper degree of humidity to insure only a proper evaporation of the internal moisture of the eggs.

It is obvious that the conditions set up by the eggs themselves will produce temperature stratification in the egg chamber, and in additions emanations from the eggs of a gaseous nature will accentuate the stratification in the chamber. In a large collection of eggs in which

incubation has started the temperature at the center of the collection will be raised very much higher than the temperature nearer the bottom and sides of the collection, from which it appears very clear that the reason for the success of the small incubator with its single layer of eggs is due to the fact that with such a small egg chamber uniform conditions are more easily maintained and it is only necessary to watch the condition of the particular horizontal air stratum in which the eggs are located. Such ideal conditions cannot, however, be maintained in a large incubating chamber containing many superposed layers of eggs. The simple way in which applicant overcame the difficulty was through the provision of a mechanically operated air forcing means which would force a rapid circulation of air through the whole collection of eggs in the chamber and past the heater. The mechanical air forcing means is an essential factor, if heat is to be conserved and the conditions maintained uniform; for a circulation, which is due to differences in temperature in different portions of the circulatory system, as, for example , where the air is circulated by the effect of the heater in causing the heated air to rise and pass into or through the incubating chamber, will not answer for large collections of eggs. Its efficacy is doubtful even in a small incubator, for the reason that at the time when the circulation should be most active, i.e., during the final stages of development of the embryo, the embryo is itself generating the greatest quantity of heat, which will counteract the circulating tendency of the heater on the air. Furthermore in the incubating process during the final stages of the development the external heat supplied must be greatly reduced and this of itself would reduce the rate of circulation, and consequently, the heat and gaseous

stratification would be augmented rather than prevented. The claim of the application includes as its mechanical elements an incubating chamber adapted for the reception of superposed trays for eggs to be incubated, means for effecting a distribution of air uniformly to the eggs in the chamber, means for heating the air, and mechanically operated means for forcing a uniform circulation of air through all parts of the chamber and past the heater. It is through the instrumentality of these elements that the temperature and gaseous stratification of the air in the chamber is overcome, and the eggs are uniformly subjected to the influence of air of the same temperature and composition. In other words, regardless of the number of superposed layers of eggs in the chamber, each egg will be subjected to the conditions best calculated to promote the development of the embryo and it becomes a comparatively simple matter to regulate both the temperature, the humidity or the gaseous compos ition of the air, inasmuch as all of the air is drawn positively through a circulatory system and may be modified at any point during its circulation. By providing a forced circulation the influence of the eggs themselves becomes a negligible factor, a result which is impossible where temperature conditions are relied upon to effect the circulation and cause a uniform distribution of the air to the eggs.

In treating this subject, the inventor himself says:

> "Large room hatcheries have been tried before and have failed because their builders did not know how to overcome the inequalities of temperature due to the convection currents of air or gravity drafts set up within the chamber by the difference in temperature of walls, eggs, or other objects, and also because with dead air it was impossible to keep

large quantities of incubating eggs from overheating in the center of the mass. In the Hastings hatchery temperature stratification is overcome by forcing through the hatching chamber a mechanically impelled blast of air. This rapidly moving air evenly distributed throughout the cross section of its movement by suitable gratings, results in a more even distribution of heat within a hatching chamber holding many thousands of eggs than is secured in a single egg tray of the most perfect dead air machine. In the practical plant the entire volume of air passes through the fan every thirty seconds."

"In the Hastings hatchery, a current of air is blown past each and every egg at the rate of thirty feet per minute and this rapidly moving air quickly bringing the temperature of the egg to approximately that of the air. This method of heating keeps the temperature of the eggs in the advanced state of incubation down within a few degrees of that of the air, the exact difference being regulated at will by adjusting the speed of the fan. When properly adjusted the same blast of air used to heat fresh eggs does equally well for eggs in the advanced stages just as the same temperature of the body of the hen incubates the eggs at all stages of development, without recourse on the hen's part to the "hatching fever", erroneously supposed to explain the higher temperature of eggs at a more advanced stage of development. Owing to this fact eggs at all stages may be handled simultaneously with uniformly good results."

"The ventilation of all previous makes of incubators is dependent upon gravity drafts which are in turn dependent upon differences in temperature between the hatching chamber and the outer atmosphere, or in different parts of the circulating system. Thus the amount of ventilation is three times as great when the thermometer outside registers 43 degrees as when it registers 88 degrees, a fact doubtless having much to do with the poor hatches of the summer months.

The Mechanical Draft Hatchery assures very thorough and very uniform ventilation of every egg and chick in the machine, but this very rapid circulation of air in the hatching chamber, is an enclosed circuit. The operator of a Mechanical Draft plant may switch as much "fresh" or outdoor air into this inner circulation as he is willing to heat. The inventor's practice is to use but a small portion of outdoor air except in cases of excessive humidity, when a large exchange of air is utilized as a simplest means of increasing evaporation.

If this rapid movement of air through the hatching chamber could possibly injure eggs or chicks, hen nests out of doors and bird nests in trees would never have kept the race alive.

The moisture - humidity - evaporation business

seems to be helplessly confused in the minds of both incubator makers and users. The editor of Farm Poultry once criticised the writer for his theory concerning humidity on the grounds that it disagreed with the teachings of the U. S. Weather Bureau. The amusing fact of the incident was that shortly before Mr. Marvin, in charge of the humidity investigations of the Weather Bureau, had complimented the writer for his 'valuable contribution' to the science of humidity.

The moisture problem in incubation is only a matter of causing the correct amount of water to evaporate from the average egg. The function of the evaporation of a liquid into the air is dependent upon three factors; temperature, rate of air movement, and the saturation deficit, or difference between the vapor pressure (humidity) of the air and the vapor pressure of the liquid. With a gravity draft incubator the amount of air movement is dependent on external temperature while the saturation deficit is wholly determined by the humidity of the external air from whence the hatching chamber atmosphere is drawn. This introduces two weather variables into the problem and while it is theoretically possible to correct for these, in practice it is not. The Hastings Hatchery having a confined atmosphere and a uniform rate of air movement places the humidity problem under a real control. Damp air may be dried with calcium chloride, if one has other reasons for not wishing to change the atmosphere. Because of the rapid air movement such artificial drying will rarely be necessary in American practice if the writer's experience in hatching during warm foggy weather on the Gulf Coast of Texas is a fair criterion.

The Dept. of Agriculture took out a patent on a very accurate moisture controlling device invented by the writer and, when desired, the Hatchery will be equipped with automatic humidifiers based on the same principle. The introduction of moisture from the mist spray nozzles in the fan boxes to increase humidity, or running in outside air to decrease it as indicated by egg weights or air cell shrinkage is sufficient for ordinary hatching practice.'

There can be no question in regard to applicant having advanced this art, nor in regard to the value of the invention from an economic standpoint.

The references cited do not suggest the invention They illustrate:

(a) systems whereby properly heated air may be forced into living rooms of buildings and into public vehicles, and allowed to escape through the ordinary cracks and openings or through openings especially provided for the purpose; and

(b) a small incubator in which there is an air circulating system in which a heater causes a difference in the specific gravity of the air in different portions of the system.

In the latter arrangement it will be noted the heat generated by the heater and by the eggs oppose and tend to prevent circulation with the result that during final stages of development when rapid circulation is most essential, the external heat must be reduced because the eggs are themselves generating heat and the circulation will be reduced to the minimum. In other words, with the system of the references the maintenance of uniform conditions would be impossible, where the number of eggs present is sufficient to have any influence on surrounding atmospheric conditions.

With regard to the Osborn patent, it will be noted that air stratification is the very object sought to be attained, see Osborn specification, page 1, lines 25-35 and 72-83; page 2, lines 8-17 and 36-38. There is no circulatory system but the air is discharged to the atmosphere, and this is also true of the car heater of the Hawkins patent.

Respectfully,

MILO HASTINGS,

By Church & Church

His Attorneys.

December 30, 1912.

H.L.L.

Appeal No. 5585. U. S. PATENT OFFICE. March 11, 1913.

Before the Examiners-in-Chief, on Appeal.

Application of Milo Hastings for a patent for an improvement in Hatcheries for the Eggs of Domestic Fowl, filed May 8, 1911, Serial No. 624,885.

Messrs. Church & Church, attorneys for appellant.

This is an appeal from the action of the primary examiner finally rejecting the following claim:

> "A hatchery for eggs embodying an incubating chamber adapted for the reception of superposed trays for eggs to be incubated, whereby said eggs will be arranged in layers one above the other, means for effecting a distribution of air uniformly to the eggs in the chamber, means for heating the air, and mechanically operated means for forcing a uniform circulation of air through all parts of the chamber and past the heater, whereby convexion currents will be eliminated, temperature and gaseous stratification of the air in the chamber overcome, and the eggs subjected to the influence of air of the same temperature and composition."

The references cited are:

Hawkins, 725,079, Apr. 14, 1903.
Osborne, 886,585, Apr. 28, 1908.

The device covered by this claim is an incubator which differs from the incubator shown in the patent to Day, cited by the examiner, in that a mechanically operated fan is employed for the purpose of securing ventilation of the incubator, instead of relying upon the natural circulation caused by the lamp which supplies the heat. By reason of the employment of a fan for this purpose, the appellant contends that he is able to carry out the incubation of eggs much more perfectly, especially

when conducted upon a large scale. It is contended that if the natural circulation of the air due to the lamp be relied upon, the air in the incubator will become stratified, by reason of the different temperatures of the eggs, and that as eggs absorb heat during the first portion of the process of incubation, and give out heat during the latter portion thereof, the additional heat at the end of the process will tend to check the draft at the precise time when it is most needed, while in the case of the forced draft the constant circulation of air at the proper temperature and humidity can be readily supplied at all times. The original specification is very brief and makes it clear that the sole invention is in securing better ventilation and a more uniform temperature throughout the hatching chamber, by substituting a forced draft for gravity drafts.

The examiner cites the patent to Osborne and the patent to Hawkins, for the purpose of showing that forced draft for ventilating purposes is well known in the art of ventilation, and in view of this holds that there can be no invention in substituting the forced draft for the natural draft of the lamp, for the purpose of securing more perfect ventilation in an incubator.

The appellant in his brief lays great stress upon his alleged success in building and carrying on hatcheries upon a large scale, and this may all be true, but there is nothing in the claim which involves operation upon a large scale, the claim covering nothing more than would be found in the Day incubator if a fan were supplied to give better ventilation, and, even if the idea of carrying out the operations on a large scale could in some way be included in the claim, it would not appear to change the situation, for it is not novel to operate on a large scale as is admitted in the brief, reference being made to incubator establishments which have been operated in Egypt. Also, large numbers of eggs have been incubated at the same time



F/H

in this country, but in these cases it is stated to have been accomplished by means of a number of separate incubators.

We find nothing which indicates that the appellant has taken advantage of any newly discovered principle in the incubation of eggs. For it was well known that eggs should be supplied with air at the proper temperature and the proper degree of humidity, and that the ventilation should be made as perfect as was consistent with the means employed. In operating with incubators of moderate capacity, it is apparently not necessary to ventilate as perfectly as it would be if the eggs were incubated in a single large apartment, but this only means that when operating on a large scale a system of ventilation should be employed which will operate perfectly and be applicable to the increased size of the plant, and it is well known that even in the ventilation of buildings the proper device for this purpose is to ventilate by means of a forced draft. We therefore believe that the examiner is right in holding that there is no invention in substituting forced draft for the natural draft in an incubator.

The decision of the examiner is affirmed.

Frank C. Skinner

Jas. F. Bagnall

Examiners-in-Chief.

I agree with appellant that the claim is patentable.

E. G. Steward

Examiner-in-Chief. 1044

762

Appeal No. 5585 Paper No.
Notice of Decision

DEPARTMENT OF THE INTERIOR
UNITED STATES PATENT OFFICE
WASHINGTON

EXAMINERS IN CHIEF
MAR 11 1911
U. S. PATENT OFFICE

Mils Hastings
c/o Church + Church Attys.
McGill Bldg.
Washington, D.C.

Sir:

Inclosed find copy of decision this day rendered by the Examiners in Chief in the ex parte ~~interference~~ case of Mils Hastings — Serial No. 624,885.

By direction of the Commissioner:

Very respectfully,

W. F. Woolard,
Chief Clerk.

1045

2-421

1911

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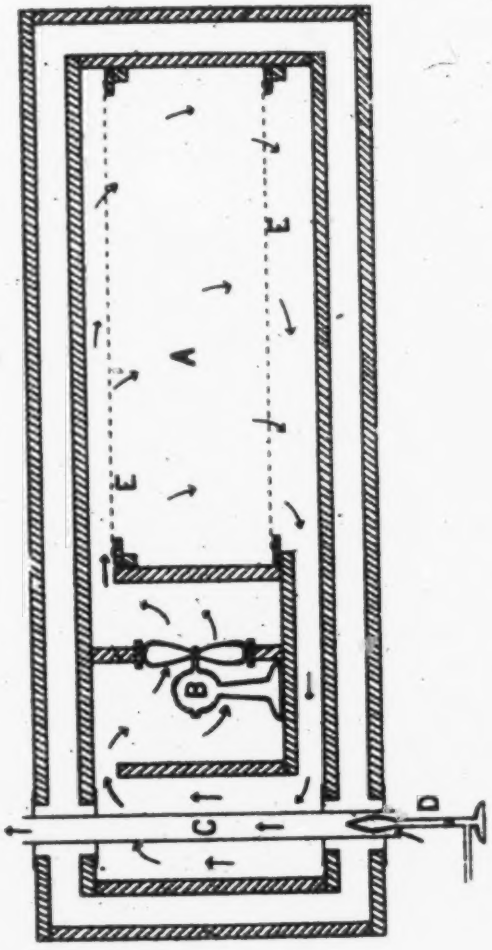


WITNESSES:
Walter B. Davis.
Isabel E. Carkhuff.

INVENTOR.
Milo Hastings
BY
ATTORNEY

1047

[fol. 1048] PLAINTIFF'S EXHIBIT No. 100

IN THE DISTRICT COURT OF THE UNITED STATES FOR THE DISTRICT OF OREGON

The President of the United States of America to E. K. Folsom, a Notary Public in Muskogee, Oklahoma, Greetings:

Know Ye, That we, in confidence of your prudence and fidelity, have appointed you a Commissioner, and by these presents do give you full power and authority diligently to examine upon their corporal, oaths, or affirmations, before you to be taken, L. A. Cory, S. J. Anderson, R. Shanafelt, John G. Lieber, Mrs. John G. Lieber, Huston A. Hogan and L. W. Pitts, of Muskogee, Oklahoma, as witnesses on the part of the plaintiffs, in a certain cause now pending undetermined in the District Court of the United States for the District of Oregon, Numbered E-8591, wherein The Buckeye Incubator Company and Samuel B. Smith are plaintiffs, and Archie E. Stone is defendant touching the premises; said testimony to be taken before you upon an oral examination upon interrogatories.

And we do require you, before whom such testimony may be taken, to reduce the same to writing, and to close it up under your hand and seal, directed to the Master in Chancery of the above entitled Court, at the City of Portland, Oregon; and that you return the same, when executed, as above directed, annexed to this writ, with the title of the [fol. 1049] cause endorsed on the envelope of the commission, into said District Court, with all convenient speed, and not later than thirty days.

Witness the Honorable Chas. E. Wolverton, Judge of this said Court, and the Seal thereof hereunto affixed this 14th day of September, 1925.

G. H. Marsh, Clerk, by F. L. Buck, Chief Deputy Clerk. (Seal.)

UNITED STATES OF AMERICA,
District of Oregon, ss:

I, G. H. Marsh, Clerk of the United States District Court for the District of Oregon, do hereby certify that the foregoing copy of Deposition of L. A. Cory, et al., in cause

No. E-8591, The Buckeye Incubator Company, et al., vs. Archie E. Stone, has been by me compared with the original thereof, and that it is a correct transcript therefrom, and of the whole of such original, as the same appears of record and on file at my office and in my custody.

In testimony whereof I have hereunto set my hand and affixed the seal of said court at Portland, in said District, this 29th day of January, 1934.

G. H. Marsh, Clerk, by (Signed) F. H. Buck, Chief Deputy Clerk. (Seal.)

[fol. 1050] IN THE DISTRICT COURT OF THE UNITED STATES FOR THE DISTRICT OF OREGON

In Equity. E-8591

THE BUCKEYE INCUBATOR COMPANY, et al., Plaintiffs,

vs.

ARCHIE E. STONE, Defendant

Depositions Before Honorable Robert F. McGuire, Master in Chancery in the Above Entitled Court and Cause

Depositions of witnesses examined on behalf of the plaintiffs pursuant to the commission issued on the 14th day of Sept., 1925, by the Honorable Charles E. Wolverton, Judge of said United States District Court at the offices of Linebaugh, Pinson and Fite, in the City of Muskogee, Oklahoma, on Monday, the 28th day of Sept., 1925.

Present D. H. Linebaugh, Esq., on behalf of plaintiffs and no appearance on behalf of defendant.

And, Thereupon, L. A. CORY, a witness called on behalf of plaintiff, being first duly sworn, testified as follows:

Examination by Mr. Linebaugh:

Q. State your name, age and post office address?

A. L. A. Cory, 52, Muskogee.

[fol. 1051] Q. Heretofore have you been connected with and an officer of a poultry organization or society in Muskogee or Muskogee County?

A. Yes, sir, I have been a member of the local association I guess practically ever since it was formed.

Q. When was it formed, approximately what time.

A. I should think 15 years ago.

Q. Were you a member of Muskogee County Poultry Association during the years 1912 and 1913?

A. Yes, sir.

Q. Do you recall an egg hatchery or incubator located in Muskogee during those years, known as the Hastings Hatchery.

A. I do.

Q. Did you take eggs to that hatchery for the purpose of having them hatched?

A. I did.

Q. When and in what numbers?

A. I just remember the circumstances, but when, and what numbers, I would not be able to state. While Mr. Hastings was down there I took eggs three or four times to be hatched.

Q. How many eggs at each time would you take, do you remember?

A. 50 to 100 eggs each time. The exact number I can't remember.

Q. What results did you secure; that is, how many chicks would you get?

A. I never received any chickens the three or four times—always negative.

Q. Were the eggs fertile eggs, and should they have hatched?

A. To the best of my judgment they were. They were hatching under hens at home, and I sold some that hatched.

Q. What excuse did the management give for failure to deliver any chicks?

A. I don't remember what excuse he gave, if any.

Q. But you received no chicks from all of the eggs which [fol. 1052] you took?

A. No, sir, of that I am sure.

Q. And the same character of eggs which you took to the hatchery hatched under hens and for other persons to whom you sold eggs.

A. Yes, very well.

L. A. Cory.

Witness fee of $1.50 paid to witness by plaintiff. L. A. Cory.

And thereupon, S. J. ANDERSON, a witness called, being first duly sworn, on behalf of the plaintiff testifies as follows:

Examination by Mr. Linebaugh:

Q. You may state your name, age and post office address?

A. Selby J. Anderson, 60, Muskogee Oklahoma.

Q. Were you and are you now interested in the Poultry Association or organization of Muskogee, or Muskogee County?

A. No, sir, I am not now, I have heretofore been. I organized the first association here in 1910—I am the man that organized it.

Q. Did you occupy any official position with that association?

A. I have been secretary, and Superintendent for the New State Fair for 12 years—poultry superintendent.

Q. You have had quite a good deal of experience in raising chickens and judging chickens and eggs?

A. I have raised all the standard varieties.

[fol. 1053] Q. That experience has extended over a number of years?

A. Thirty.

Q. Do you recall a hatchery, or incubator, which was located and operated in Muskogee, known as the Milo Hastings hatchery, being operated by Milo Hastings, John G. Leiber and Ed. Hastain, during the years 1912 and 1913?

A. I do.

Q. Did you have occasion to, and did you take to the hatchery, or incubator, operated by these parties, eggs for the purpose of having them hatched?

A. I did.

Q. With what result?

A. None.

Q. That is, you received no chicks from the eggs which you took?

A. I received five, I believe.

Q. Five out of approximately how many eggs?

A. 150 or 200.

Q. Were the eggs that you took fertile eggs, and should they have hatched under proper conditions?

A. They were fertile and should have hatched. They were hatching under hens.

Q. Did you have occasion to investigate that hatchery because of your interest in poultry, as well as your official connection with the association?

A. I did. I was there a great many times.

Q. Do you know of any one ever having received as much as a 50% hatch of the eggs which they took?

A. I do not. However, I was told later on in the season he got better results, but I got disgusted and quit.

Q. When, to your memory, was the first time this Hastings Incubator was operated?

A. It was in January or February, 1912. However, I did not put any eggs in until about the first of March, as I aimed to get my chicks off in March or the first of April. [fol. 1054] Q. When was it last operated?

A. I don't know, it was here a year or more, I should stay, to the best of my recollection, it possibly extended over in 1913, some time, but I cannot tell you exactly. I don't know what the rest have sworn to.

Q. From the beginning until the last operations were there changes made in its construction?

A. Yes, sir. A number of them. He had a regular work shop back of it, where he was working and changing all the time.

Q. Describe the arrangement of the incubator, as to location of the fan, the egg chambers, the heater, and means of conducting the heat from one section to the other, as you now recall.

A. The first fan that was put in was a fan similar to what we see in the restaurants, to drive the hot air out; later on there was a large rotary fan, like you might have in your office, was the only fan I saw. The rotary fan, as it revolved, would throw the air to one side and as it would come back, would throw to the other. I never saw the blower they had in, not to my recollection.

Q. How were the egg chambers constructed, Mr. Anderson?

A. Mr. Linebaugh, when this was first constructed, I believe it was a dressing room used in the opera house. This room was longer than it was wide, and he started to have his trays on the outside with an alley between. Later on, these were changed, and an apartment made, and those were placed in the center. He had large heavy doors, without hinges, with a couple of straps on it, and he would pull it out if he wanted to examine that apartment, and then

put it back. That hot air came through the top. Not through the bottom but through the top. It's pretty hard to [fol. 1055] remember those things 12 or 15 years ago.

Q. The means of conducting the air and forcing the air through the incubator, was changed several times?

A. Yes, sir.

Q. You stated there were certain changes made, and these changes took place in the early part of the season, because you stopped paying attention to it?

A. When I got disgusted I quit paying attention to it.

Q. You became disgusted because you took fertile eggs there, without any results?

A. Yes, sir.

Q. Was there a poultry show held in Muskogee in the winter of 1911 and 1912?

A. Yes, sir.

Q. Do you remember about the date?

A. In January, the latter part of January, 1912.

Q. Did you, in company with others, visit the Hastings Hatchery during this show?

A. I did.

Q. Were they operating at that time?

A. Just started.

Q. How was the inside of the hatchery arranged at that time?

A. On trays.

Q. How was the interior of the hatchery at the time of this visit?

A. It was in one body. It was not in apartments, as it was later on.

Q. The heating chamber, fan chamber, and egg chamber were all in the same room?

A. Yes, sir.

Q. But you know it was later changed and divided up.

A. Yes, sir.

S. J. Anderson.

$1.50 witness fee, paid by plaintiffs. S. J. Anderson.

[fol. 1056] And Thereupon, RICHARD S. SHANAFELT, a witness on behalf of the plaintiff, testified as follows:

Examination by Mr. Linebaugh:

Q. You may state your name, age and post office?

A. Richard S. Shanafelt, 46, Muskogee.

Q. Did you live in Muskogee during the years 1912 and 1913?

A. I did.

Q. Do you remember the time of the construction in Muskogee of an incubator or egg hatchery, known as the Hastings Hatchery, being an enterprise promoted by Milo Hastings, John G. Lieber and Ed Hastain?

A. Yes, sir.

Q. Were you interested in poultry raising at that time?

A. I was.

Q. Had been for several years prior to that time?

A. Not on a large scale, but as a poultry fancier.

Q. Did you ever become a customer of this hatchery, that is, did you take any eggs to hatch?

A. Yes, sir.

Q. When and with what results?

A. Shortly after he opened up for business I took a number of eggs. My mind is not clear on that at this time. I believe I took approximately 200 eggs, from which I received back three or four chickens, a very small number, I think three or four, one of my own breed and three or four of various other breeds.

Q. Were these particular eggs that you took fertile, and should they have hatched under proper conditions?

A. Immediately after the results of this hatch, I had occasion to place other settings, or set other eggs, from which I got a very fair percentage of chicks out of the same class [fol. 1057] of eggs. I at that time had the black Orpington chickens.

Q. When was this that you took the 200 chickens to be hatched?

A. I could not say, it was shortly after he opened up for business but I have been out of the chicken business for several years now.

Q. Did you take any eggs to the hatchery at any subsequent time?

A. No, one experience was sufficient.

Richard Shanafelt.

Witness fee, in sum of $1.50 paid by plaintiffs. Richard Shanafelt.

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JOHN G. LIEBER, being first duly sworn, and appearing as a witness, on behalf of plaintiffs, testifies as follows:

Examination by Mr. Linebaugh:

Q. State your name, age and post office address?

A. John G. Lieber, age 53, post office Muskogee, Oklahoma.

Q. How long have you been a resident of Muskogee, Oklahoma?

A. 31 years.

Q. Have you been interested in the past in an incubator which was located in Muskogee, Oklahoma?

A. I have.

Q. With whom, if any person, were you interested in such incubator?

A. E. Hastain and Milo Hastings.

Q. During what period of time were you interested with these parties in this business?

A. During 1911, 1912 and part of 1913.

Q. The incubator was operated for the first time in 1911, [fol. 1058] was it, at Muskogee?

A. It was built in 1911, operated in 1912 and 1913.

Q. After it ceased operations in 1913, what became of its parts, if you know?

A. It was taken apart, and the parts moved to my farm and the farm of Mr. Hastain, north of Muskogee.

Q. After the removal to your farms, what became of them?

A. Part of them are still there, scattered about, most of the lumber has been used in making repairs on the farm.

Q. What was the capacity of the incubator when it was being operated in Muskogee?

A. 30,000 eggs at one time.

Q. Was it ever operated to capacity?

A. The largest amount it ever had in it, if I remember correctly, was about 25,000.

Q. How many times did it have as many as 25,000 eggs in it?

A. I think only one time.

Q. When was that?

A. It was some time during the first season of 1912.

Q. Out of the 25,000 eggs, how many chicks did you get?

A. I could not say as to that, the amount. It gave average hatches for that year.

Q. Approximately how many chicks were hatched out of that 25,000 eggs?

A. Approximately one half, or a 50% hatch.

Q. Do you know to whom these eggs belonged?

A. They belonged to people scattered all over this section of Oklahoma.

Q. Can you name some of them who are residents in or about Muskogee?

A. Mrs.—This lady lives at Caddo Mills, Texas, I know but a few I never had anything to do with the details of the thing. This lady is Mrs. J. L. Morrow, Caddo Mills, Texas. She put 30 eggs in the incubator, and got a hatch of 28 chicks. Mr. L. A. Cory, Muskogee, Mr. S. J. Ander- [fol. 1059] son, Muskogee, Mr. Hogan, I think had eggs in it, Houston Hogan. I don't think I put any eggs in myself, but I bought some chicks. I think I bought about 500. That is all I know of definitely. Milo Hastings kept all the books.

Q. You say you had nothing to do with the detail of the business?

A. Nothing with the book keeping and things like that in the office.

Q. What was your interest in the business, state this fully, please, and in detail.

A. Milo Hastings came to Muskogee in 1911, and endeavored to get the Commercial Club to back his hatchery proposition. They sent Mr. Hastings to me. He had the idea, which appeared to me to be new, and after going over the matter with him I agreed to furnish $1,000.00, to start the business. We organized a corporation under the laws of Oklahoma, corporate name was Hastings hatchery. Milo Hastings, Ed Hastain and myself were the incorporators. My recollection is that I owned 50% of the stock, Ed

Hastain 1% and Milo Hastings, 49%. The capital stock was I think $5,000.00. Of which one half was eventually paid in by me. Milo Hastings interest was his idea or device, Ed Hastain was a friend of mine and in the corporation merely to make it legal, as the Oklahoma law requires three persons to form a corporation. I furnished all the money, excepting during the year 1913, after Milo Hastings left, when E. Hastain put in something like $500.00. Milo Hastings built the hatchery in 1911, the fall and winter of 1911 and 1912. He did practically all the work himself. He started to operating it early in 1912. He had originally told me that $1,000.00 would be all he would need. Which I agreed to furnish. Before he had the hatchery in operation, he found that this would [fol. 1060] not be sufficient and I agreed to furnish another $1,000.00. With this he succeeded in starting the Hatchery, but he soon discovered that this would not be sufficient to carry the work through. So he hit upon the plan of doing custom hatching. That is, hatching eggs, in small or large quantities, as the people would bring them to the hatchery. This was done to enable him to get some ready money as he felt that he had already imposed on me financially and in fact I was about broke anyway. And he knew it.

Q. At this time Judge you had a number of different interests in Muskogee, did you not?

A. Yes, sir. More than I had any business with.

Q. Because of these several business interests, you left the operation, management and control of the Hatchery, largely to Milo Hastings?

A. Yes, sir. Now, Mr. Linebaugh, I want to explain more about that custom hatchery business. Mr. Milo Hastings, in order to get by financially, endeavored to do practically all the work himself. Operate the hatchery, or incubator, do the office work, and everything else in connection with it. He had had experience in newspaper work, and was a splendid publicity man. He succeeded in getting the newspaper and magazines that circulated in this part of the state to insert articles about this hatchery. It was a new thing then, not only here, but I think in the whole United States. The result was that he was swamped with business. He had at the one time that I remember, about 25,000 eggs in the incubator, many of them belonging to individuals who had only one setting of eggs, or about 15,

the hatchery. I judge there must have been something like 1500 or 2000 different people who had eggs in the hatchery at that particular time. He was supposed to keep each [fol. 1061] fellows eggs separate. But with the work he was endeavoring to do himself, it was a physical impossibility for him to keep track of the various batches of eggs. The result was that one fellow who brought plymouth rocks eggs would get Rhode Island red chicks. And so on, through the whole 1500 or 2000 individuals. Milo Hastings was an eccentric sort of a fellow and became disgusted with the mess in which he had gotten the business of the hatchery in. He finally left, turned it over to me, and told me to do the best I could with it. Milo Hastings' contract with the Hastings Hatchery was that in the event he obtained a patent on his device, the patent was to be transferred to the corporation. At the time the Hatchery was in operation in 1912, a Mr. Hicks who was writing for a poultry magazine in Kansas, came down and inspected the Hatchery, took photographs of different parts of it, and an article with some of the photographs was published in the Kansas Poultry Journal. Some time after that I learned that someone had obtained a patent on the device that we used in the Hastings Hatchery. I did not learn who it was, except that it wasn't Milo Hastings. I am not prepared to say whether the Hastings Hatchery, the corporation, has any interest in the patent which was eventually obtained upon this device, but if it has, we of course expect to claim our interest.

Q. Was your venture in this matter successful or otherwise?

A. I would say it was otherwise. I got 500 pullets when we discontinued the operation of the business. That was all I ever got.

Q. For your $5,000 investment, you got 500 pullets?

A. I only invested $2,500. I really put $2,000.00 in the [fol. 1062] hatchery, and about $500.00 in rent that I paid on a farm which Milo Hastings had rented near Bacone College, where he took what chicks he had no sale for and endeavored to raise them. He had a number of brooders of his own make, out on that farm.

Q. Did any one abscond with any of the profits, or was the loss occasioned by the failure of the business to make money?

A. I don't think any of us ever made a penny out of it. Milo Hastings put in I would say 18 months time of his time, and he worked diligently. I don't think he ever used a penny of the corporation's money improperly.

Q. Why did Milo Hastings abandon the business in 1913? Was it because it was unprofitable?

A. It was unprofitable because he was attempting to do custom hatching, and did not have the force to look after the business, which resulted in a lot of dissatisfied customers.

Q. After Milo Hastings left, did you or Ed Hastain undertake to operate the Hatchery?

A. Mr. Hastain and a brother-in-law of his, named Dierfield, operated the hatchery during a part of 1913. But neither of them knew anything about the principle of the hatchery and they had no success.

Q. Did you ever personally undertake to operate the Hatchery?

A. No.

Q. Why?

A. Because I had my hands full with other things.

Q. Will you please explain in detail the method of the construction of this hatchery, and the theory of its operation?

A. I can only give the theory of the hatchery from a layman's standpoint. The large hatchery at that time was a new thing. In the small incubators of from 50 to 250 eggs [fol. 1063] capacity, it was not necessary to have any device to circulate the air. But in a large incubator of 25,000 egg capacity, this was absolutely necessary. Mr. Milo Hastings accomplished this by having a blower operated by an electric motor, which forced the air over a number of pipes, which were heated by a gas fire, and the air then passed or was forced by this blower into each compartment of the incubator. This incubator had six separate compartments, each holding 5000 eggs. He had valves or cut-offs connected with each of these sections, or compartments, by which he could regulate the heat of the air in each section or compartment. He could have one temperature in one compartment and a different temperature in another. He explained to me at the time that this was necessary because when eggs were first placed in an incubator they required the maximum amount of heat whereas a few d

before they hatched the chicks in the eggs furnished considerable heat, and therefore it was not necessary to supply as much artificial heat just before the chicks hatched. He gave this as his reason for having to have the device so that it would have one temperature in one compartment and a different temperature in another compartment. He of course had to turn the eggs by hand and as the process of hatching advanced he would transfer the tray of eggs to the compartment which had the right temperature for the eggs at that stage of the hatching.

Q. How were you able to ascertain the premise temperature of the several compartments?

A. There was a thermometer in each compartment, and with the valves or cut-offs he would get the amount of heat [fol. 1064] that he needed in each compartment to make it the temperature he wanted.

Q. These valves or cut-offs were screens between the different compartments which you would open or close as you desired to change the temperature in any particular compartment, were they?

A. Yes, sir, only the cut-offs were in the top of each compartment; they were the slide or cut-off; was made of tin or sheet iron.

Q. Were your compartments built on one side of the room, or were they built on both sides of the room?

A. They were all on the East side of the room.

Q. What did you use the West side of the room for.

A. That was used to work the incubator. The trays were four or five feet in length and it was necessary to pull them plumb out of the compartment when you went to turn the eggs. The space between the incubator and the west wall of the room was used for that purpose.

Q. Between the work room on the west side and the compartments on the east side there was no partition?

A. No. Except that there was a partition north of the compartments which housed the blowing apparatus, and another one south of the compartments, which took care of the hot air after it had passed the heating pipes and was ready to go into the compartments.

Q. The fan was on the north side of the room next to the compartments, and the heating pipes on the south side of the room, next to the compartments, is that right?

A. Yes, sir. Except I think he had a few heating pip between the East end of the compartment and the east w of the room.

Q. Was there any method by which the temperature i the work part or west side of the room could be chang [fol. 1065] or was its temperature stationary?

A. The work room got its temperature from the hatcher itself, I suppose the surplus heat. I remember that it wa generally very warm in there. I watched Mr. Milo Has ings frequently when he would be working with the inc bator.

Q. The west side of the room, then, usually had an eve temperature?

A. Yes, sir.

Q. Mr. Lieber, I hand you here a drawing that is tak from the Milo Hastings file wrapper in the patent offic In this drawing you will notice the part marked "A" is designated as egg chamber, or egg compartment, "B" is marked the fan, "C" the heating pipe, "D" a gas burne and "E" is a perforated partition, or fabric, both abov and below the egg chamber. The arrows indicate the ai movements. Now, Mr. Lieber, was the Milo Hasting hatchery here in Muskogee constructed along those lines?

A. The principle of Milo Hastings Hatchery was pra tically the same as shown on the drawing. Except, tha the heating pipe would be to the back and right hand-sid of the egg chambers, with an air pipe and valves or cut-off connecting with each egg chamber, as indicated on thi drawing by the arrows. There was also this slight differ ence. He at first used an ordinary exhaust fan as ind cated on this plan, but found that it would not give hi positive circulation of the air, and he substituted the ex haust fan for a regular blower. Such as is used in cotto gins now adays, only only not so large.

Q. The drawing, about which you have just given yo answer, is introduced as a part of your deposition, and fo its identification, will be marked Exhibit "A".

[fol. 1066] Q. Mr. Lieber, I hand you herewith anot drawing, which is marked for identification by the Not as Exhibit "B", and you will note that there are three se arate illustrations here; one, the floor plan, another a cr section front view and a third the cross-section end vi

Does this illustrate the arrangement of the Milo Hastings Hatchery?

A. Yes, sir. I am not positive though about the lower air conduit, indicated as "J". I know the upper conduit was there, because I tore it out myself. I don't remember, however, about the lower one.

Q. Mr. Lieber, were you familiar with the arrangement and construction of a Hastings incubator, at the time it was built or did not gain your information at the time you tore it down?

A. I was getting my information while it was being built, and also when I tore it down.

Q. In this drawing there are six egg chambers shown. Are you sure that six was the correct number?

A. Yes, sir.

Q. The location of the fan which is marked "F" was approximately in the position as shown here, was it not?

A. Yes, sir. There was something else right at the fan or blower which is not shown on the drawing. It was a shallow pan which contained water and was used for the purpose of moistening the air. Otherwise, this fan or blower is practically as it was in the Hastings Hatchery.

Q. Was there a passageway between the East wall and the east end of the egg chambers? That is marked "L" in this drawing? A. Yes, sir.

Q. Did the exhaust end of the fan, or blower, extend into this passageway?

A. It was connected with it by a pipe extending from the [fol. 1067] exhaust of the blower to the air passageway. It was only a short distance. Probably a foot or 18 inches.

Q. You have stated that the heating pipes were located in this passageway, marked "L" have you not?

A. My recollection is that he had a few pipes towards the south end of the passageway "L". Most of the pipes, however, were south of the egg chambers, between the egg chambers and the south wall of the building, as indicated on the drawing.

Q. What kind of pipes were these?

A. Just ordinary stove pipes.

Q. Approximately what size?

A. Either 4 or 5 inches in diameter. They were not 6 inch.

Q. How was the heat furnished for these pipes?

A. By gas burners.

Q. Was there a gas burner at the bottom of each pipe?

A. I think not. One burner would supply heat for a series of pipes, I guess you would call it. The pipes would extend upward, possibly two joints, then elbow back to the floor, again, and then up again, up and down again, until they ended in a pipe going out of the building. His aim was to use as many different coils of this pipe as it would take to utilize the heat which the gas burner would furnish.

Q. How did the air get from this heating chamber that we have marked "C" into the egg chamber?

A. Through the air conduit, marked "H" on the drawing.

Q. Did this air conduit, marked "H", connect with each of the egg chambers?

A. Yes, sir, between the air conduit "H" and each egg chamber was a cut-off or valve, by which the heat in each separate egg chamber was regulated.

[fol. 1068] Q. How did you get at this valve to regulate the heat?

A. There was a space between the egg chamber and the top of the building. My recollection is that it had a little door just above each compartment which he could open and with his hand push the cut-off or valve either way.

Q. Was there more than one main conduit across the top of the egg chambers?

A. No, sir.

Q. Mr. Lieber, state what you remember regarding the space below these egg chambers?

A. I remember very little about that particular part of the incubator. And I could not swear positively how the bottom part of it was built unless I could refresh my memory from drawings, or by talking to someone who actually knew.

Q. Do you know of anyone who does actually know?

A. I know of only two persons who would probably know about it positively from memory, Milo Hastings is one and Ed Hastain the other. I do know, however, that the incubator was constructed so that each separate compartment could have the temperature desired.

Q. Mr. Leiber, how could they secure that heat desired or rather that temperature desired with only one air intake or conduit?

A. You probably could not, but I am not an expert on the circulation of air and for that reason I am unable

testify positively. The hatchery I believe was constructed substantially as shown on the drawing which I have in my hand, marked Exhibit "B", except that the moisture pan is now shown and the pipes indicated as "D" went up and down, as I have heretofore testified.

Q. Mr. Lieber, can you indicate by means of arrows on that drawing the movements of the air through the egg chamber?

[fol. 1069] A. I will make dashes—it went right out this way (witness beginning at "F", along passageway marked "L" to heating chamber "C" into upper air conduit "H", and down into each compartment of the egg chambers).

Q. How did this air get out of the egg chambers?

A. I don't remember positively, but it probably got out, just as indicated on this drawing, except, that my recollection is, that there was a valve or cut-off in the north end of the upper air conduit "H", which connected with the fan chamber "B". There may have been another opening from the bottom of the egg chamber, from the space under the egg chamber, into the fan chamber "B". But I don't remember about that.

Q. Do you believe it was possible to regulate the temperature in each of these egg chambers, as you have indicated?

A. That is another technical air circulating question. I am afraid I can't answer it. I would say that you could circulate it must better by having a hole in the bottom of each egg chamber, as well as in the top, as indicated on the drawing.

Q. Was there any arrangement for getting rid of foul air?

A. There was an opening or a door from the work room end into the fan chamber "B". That I think was the only place where fresh air could be taken in. And, of course, when you took the fresh air in the foul air would get out.

Q. The intake of fresh air, and the exhaust of foul air was accomplished by means of this door, or opening, was it not?

A. Yes, sir, except that there was also a door into the connecting the work room end with the heating chamber [fol. 1070] "C", which could also be used, for letting in fresh air or expelling foul air.

Q. Were these doors kept open at all times?

A. No, sir, they were kept closed most of the time.

Q. What determined when they should be opened?

A. The mind of the operator, I guess, or the temperature of the different compartments.

Q. Was it in any way regulated automatically?

A. Not that I remember of.

Q. Were eggs in different stages of incubation in the same egg compartment?

A. That depended entirely on how many eggs he had in the incubator. If he had only a few hundred dozen, he could incubate them all in one compartment, whereas, if he had many eggs, it would be necessary to transfer the eggs of a certain stage of incubation all into one compartment. In other words, it was fixed so that it could be operated as the ordinary small incubator, used in the homes. Or would be operated on a large scale.

Q. Did Mr. Hastings completely fill one compartment before putting eggs in another compartment? Or did he have them scattered throughout the machine if he only had a few thousand eggs at that time?

A. I could not say as to that. That was a matter of detail, in the operation of the hatchery, to which I paid little attention.

Q. Was the construction of the incubator changed materially after the season started?

A. No, the only change that was made as I remember was to substitute the blower for the ordinary exhaust fan which he at first used to circulate the air.

Q. Do you remember how early in the year 1912, the first chicks were hatched?

[fol. 1071] A. It was cold weather, and must have been the latter part of February or the first part of March.

Q. What season in the year was the machine nearest filled?

A. It must have been along about the latter part of April or the first of May when it was nearest to its capacity. However, I can't swear positively as to that.

Q. Do you remember what eggs were worth at that time?

A. No, sir.

Q. Do you remember what price you got for baby chicks?

A. No, sir. Milo Hastings attended to all that.

Q. Are you positive that you secured at least a 50% hatch?

A. In some cases more than 50%. Some folks had just as well had door knobs in the hatchery, so far as the chicks they obtained from their eggs. Some of them got none. But I do remember that the incubator hatched what was regarded as that year as an average hatch.

Q. Was there any difference in the hatches at different times during the year?

The only difference that I remember of was that the first hatch was extremely low, and Milo Hastings attributed it to the ordinary exhaust fan, which was being used to circulate the air. After the blower was substituted for the exhaust fan he got average hatches from the incubator.

Q. Do you remember what price was paid for custom hatching?

A. I remember that it was outrageously low; that he could not make anything out of it.

Q. You have stated that there were from 1500 to 2000 different customers served by the hatchery at one time. Have you not?

A. Approximately, yes. I know nothing about the actual number.

[fol. 1072] Q. You have also stated that the greatest capacity ever in the machine at one time was 25,000 eggs, have you not?

A. Yes, sir, that is my recollection.

Q. The Mr. Hicks to whom you have referred, have you seen him recently?

A. Yes, sir. Just about a year ago.

Q. At that time did he speak to you about going to New Jersey to appear as a witness for him or for Mr. Cooley?

A. Yes, sir.

Q. What statements did he make with reference to your going to New Jersey and appearing as a witness?

A. He asked if I would be willing to come to New Jersey and testify in a case pending there involving the principle of the Hastings Hatchery. I told him I would, provided my expenses were paid.

Q. What did he say with reference to the payment of your expenses?

A. He told me that my expenses would be paid and that I would also be paid for my time.

Q. In what amount, did he say?

A. He asked me to state the amount that I wanted for my time but I told him I would leave that entirely with him. Personally I considered the expenses of the trip as pay for my time, as I have never been to New Jersey.

Q. What did he say with reference to reimbursing you for the losses which you sustained in the Hastings Hatchery at Muskogee?

A. He said that before the thing was over with I would probably get my money back.

Q. Referring to the money you had put into the Muskogee hatchery?

A. Yes, sir.

Q. After 1912, did you actually see the Hasting incubator in operation?

A. Yes, sir.

[fol. 1073] Q. When?

A. In the Spring of 1913. Mr. Ed. Hastain and his brother-in-law, Mr. Dierfield, started it, but they did not know how to operate it, and quit.

Q. That was the only time you saw it operated after 1912, was it?

A. Yes.

Q. From the first construction there were some changes made in the construction or method of operation before Milo Hastings abandoned the enterprise, was there?

A. The only change that I have any knowledge of was substituting the blower for the exhaust fan in order to get more positive circulation of the air.

Q. When did Milo Hastings leave, give the exact date, as nearly as you remember?

A. He left some time during the Summer of 1912.

Q. Why did he leave?

A. Because he had fallen down on the business end of the proposition.

Q. Then, Hastain undertook to operate it?

A. Yes, sir. But not during the season of 1912, as I remember. He may have—Mr. Ed. Hastain may have finished some unfinished work in the hatchery when Milo Hastings left. He was always ready and willing to help me out with any difficulty of that kind.

Q. How much time elapsed from Hastings leaving until Hastain undertook to operate the hatchery?

A. Unless he completed some unfinished work which Milo Hastings left in 1912, and which he would have started to complete the day after Milo Hastings left, he probably did not attempt to operate the hatchery until the Spring of 1913.

Q. Why did you wait until the Spring of 1913 for him to undertake its operation.

A. There is an old notion which is still held by many [fol. 1074] people that you can't hatch chickens except in the Spring. I judge Ed Hastain and I had those notions.

Q. How long did Hastain continue to operate in the Spring of 1913?

A. My recollection is that they only put in one batch of eggs and closed down the hatchery when the hatch was unsatisfactory.

Q. Why did he not try the second hatch?

A. We could not figure out its failure to hatch in 1913, except on the theory that Milo Hastings, the inventor, was the only man who knew how to operate it.

Q. Was not Mr. Hastain about the hatchery a great deal during 1912?

A. Yes, sir.

Q. Beside Milo Hastings, he probably knew as much about its operation as any one, did he not?

A. Yes, sir.

Q. Ed Hastain superintended the operation of the hatchery in 1913, did he not?

A. Yes, sir. He and his brother-in-law, attempted to operate it. How they did their work at that time I am unable to say. As I left it entirely with Ed Hastain.

Q. In Exhibit "A", it shows a perforated partition fabric or screen above and below the egg chambers. Was there any such partition or fabric to diffuse the air in the egg chambers of the Milo Hastings Hatchery, as operated in Muskogee?

A. There was a wood partition above and below each egg compartment in the egg chamber "A". This partition, at least the top one, was connected with the hot air passageway by the valves or cut-offs.

Q. How many holes were in this partition that you speak of in each egg chamber?

A. Just one in the top of each egg chamber. There was [fol. 1075] probably one in the bottom of each egg chamber, I don't remember about that.

John G. Lieber.

Subscribed and sworn to before me, this the 28th day of September, 1925. E. K. Folsom, Notary Public. My commission expires Sept. 15, 1927. (Notarial Seal.)

Witness fees, amounting to $1.50, paid by plaintiffs.

---

And thereupon, HOUSTON H. HOGAN, being first duly sworn, on behalf of the plaintiffs, testified as follows:

Examination by Mr. Linebaugh:

Q. You may state your name, age and post office?

A. Houston H. Hogan, Muskogee, age 30.

Q. Were you living in Muskogee during the years 1912 and 1913?

A. I was.

Q. Do you recall the location and operation of an egg incubator, or Hatchery, in Muskogee, known as the Hastings Hatchery?

A. I do.

Q. That was the particular business enterprise engaged in by Milo Hastings, John G. Lieber and Ed Hastain?

A. Yes, sir.

Q. Did you take to the hatchery or incubator, being operated by these gentlemen, eggs for the purpose of having [fol. 1076] them hatched?

A. No, I never had any custom hatching done.

Q. Did you have any experience or business dealings with the hatchery?

A. Well, I bought baby chicks from them.

Q. How many did you buy?

A. I could not say, it has been so long.

Q. Do you remember the price you paid?

A. No, I could not say, I just remember getting the chicks. I was there several times, I could not say just how many, just a few, probably fifty.

Q. What is your best recollection as to what you paid?

A. Well, I would not say. It seems to me I was working for a cleaning company, and I took chicks for cleaning some clothes, it seems to me.

Q. Can you describe the hatchery, the inside of the hatchery, as it existed at the time you saw it?

A. I know how it was, but I don't know how to go about telling it.

Q. Were the eggs in trays?

A. Yes, they were in trays.

Q. Were the trays so you could see them when you stepped into the room?

A. No, you could not see the trays. You could see the shelving the trays slid into. It seemed they slipped in on shelves, same as a book case or drawers.

Q. How were the shelves arranged?

A. One on top of the other, same as book cases.

Q. Could you walk into the compartment where the shelves were?

A. No, not where the—where the trays came into. Like for instance, they slid right into the wall, from the front. That is the best of my recollection. It was all heated, and the heat came from behind.

Q. Was there any fan arrangement?

[fol. 1077] A. Yes, there was circulation in there, but I could not tell how it was, it was changed quite a bit, experimenting.

Q. The location of the fan, and the method of its operation, as well as the method employed in forcing the air circulation, was that changed at different times, experimenting in different ways?

A. I never saw the change, but I know from what I heard. I saw the fan but I don't know how it was operated in the machine. I knew at the time but it has been too long. It has slipped my mind. All of the egg shelving was on the one side.

Q. And the west side was used for work purposes, was it not?

A. Now was the eggs on the East?

Q. Yes.

A. You have got me there, I was thinking they were on the south. It seemed to me the hall went in on the North side.

Q. On one side were the egg compartments and the other side was the work place?

A. Yes.

Q. And between there was no partition?

A. No.

Q. How did you come to be interested in this hatchery?

A. I have always been interested in chickens, and it was so far ahead of anything at that time I had ever heard of, I like to stick around and see how things went on.

Q. And you loafed there at off times?

A. No, I did not loaf there. I was in there quite a few times—any time I had any business I would make it a point to go in there.

Huston H. Hogan.

$1.50 Witness fee paid by plaintiffs. Huston H. Hogan.

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[fol. 1078] And Thereupon, Lewis W. Pitts, being first duly sworn, on behalf of the plaintiff, testified as follows:

Examination by Mr. Linebaugh:

Q. You may state your name, age and post office address?

A. Lewis W. Pitts, 320 S. 15th St., Muskogee, Oklahoma, 44 years old.

Q. Were you living in Muskogee during the years 1912 and 1913?

A. Yes, sir.

Q. Do you recall the establishment and operation in Muskogee during that period of time, or a portion of that time, of an incubator or hatchery, known as the Hastings Hatchery, being built and operated by Milo Hastings, John G. Lieber and Ed Hastain?

A. Yes, sir.

Q. Were you interested in raising chickens at that time?

A. Yes, sir.

Q. Did you ever take to this hatchery or incubator eggs for the purpose of having them hatched?

A. No, sir, I did not for the reason I had one of my own, or I would have tried it.

Q. Did you ever make an examination of this hatchery and can you now state the method of its construction?

A. We had a poultry show here and he took the crowd there one night and showed us around. That was the only time I was ever there.

Q. Do you remember how many egg compartments it had?

A. No, sir.

Q. The egg compartments were in one side of the room and the other side was used as a work room, was it?

A. All I remember, the eggs were in trays, in tiers, and I [fol. 1079] don't remember which side, but the heat and the eggs was all in one room.

Q. And the work room, was all together?

A. Yes, I remember it so well, because it was zero outside and when we were in there it was 103.

Q. Do you remember how the air current, or currents, were formed?

A. I know that he used a fan.

Q. Do you know what kind of a fan and where it was located?

A. I don't remember that.

Q. Do you remember what kind of heating plant was used to heat the air?

A. No, sir, I don't.

Q. Do you remember what method was employed to divert the air current about the trays which contained the eggs?

A. No, sir.

Q. Do you remember whether the operation of the hatchery was successful or otherwise?

A. I don't think it was, he didn't have a very good hatch, and the chickens that were hatched were rather weak.

Q. The percentage of chicks to the eggs was very low, was it?

A. Yes, sir.

Q. And what chicks were hatched were not strong, healthy chicks, but were weak, unhealthy chicks?

A. Yes, sir.

Q. How long prior to 1912, or the starting of the Hastings Hatchery, were you interested in incubation?

A. Well, I bought a small incubator in the Spring of 1906.

Q. And you have been hatching chicks ever since?

A. Yes, every year. Never missed a year.

Lewis W. Pitts.

$1.50 Witness fee pair by plaintiff. Lewis W. Pitts.

[fol. 1080] Certificate to Depositions

STATE OF OKLAHOMA,
Muskogee County, ss:

I, E. K. Folsom, a Notary Public in and for the County aforesaid, duly commissioned and qualified, do hereby certify that the foregoing depositions of L. A. Cory, S. J. Anderson, R. Shanafelt, John G. Lieber, Huston A. Hogan and L. W. Pitts, of Muskogee, Oklahoma, were taken by me on behalf of the plaintiffs, in pursuance of the commission and notices hereto attached, at the offices of Linebaugh, Pinson & Fite, in the city of Muskogee, in said County on Monday, the 28th day of September; that said witnesses were first severally sworn to testify the truth, the whole truth and nothing but the truth, and that the depositions by them respectively subscribed, as above set forth, were reduced to writing by me, and also so written in the presence of the witnesses afore-named respectively; and were respectfully subscribed by the said witnesses in my presence; and the plaintiffs were represented by Linebaugh, Pinson & Fite, and defendant was not represented . That Mrs. John G. Lieber, for whom subpoena was issued but not served, did not appear.

I do Further Certify that I am not counsel, attorney or connected by blood or marriage to either party or otherwise interested in the event of this suit.

In Witness Whereof, I have hereunto set my hand and seal of office, this 28th September, 1925.

E. K. Folsom, Notary Public, Muskogee County, Oklahoma. My Commission Expires Sept. 15, 1927. (Notarial Seal.)

[fol. 1081] IN THE UNITED STATES DISTRICT COURT FOR THE DISTRICT OF OREGON

THE BUCKEYE INCUBATOR COMPANY and SAMUEL B. SMITH, Complainants,

vs.

A. E. STONE, Respondent

Subpœna

STATE OF OKLAHOMA,
County of Muskogee, ss:

To Mr. John G. Lieber, Mrs. John G. Lieber, S. J. Anderson, L. A. Cory, R. S. Shanafelt and Huston A. Hogan:

You are hereby commanded to appear before me the undersigned, a Notary Public, within and for Muskogee County, Oklahoma, at my office, in Suite 315, Manhattan Building, in the city of Muskogee, County of Muskogee, State of Oklahoma, on the 28th day of September, 1925, at 9 o'clock A. M., to testify and give your deposition on behalf of The Buckeye Incubator Company and Samuel B. Smith, complainants, in an action pending in the United States District Court for the District of Oregon, wherein the Buckeye Incubator Company and Samuel B. Smith are complainants, and A. E. Stone, is respondent.

Whereof fail not at your peril.

[fol. 1082] Witness my hand as such Notary Public, at Muskogee, Oklahoma, this the 25th day of September, 1925.

E. K. Folsom, Notary Public. (Notarial Seal.)

STATE OF OKLAHOMA,
County of Muskogee, ss:

I, H. L. Watts, certify that I am constable for Porter Township, Muskogee County, Oklahoma, and that I served the above and foregoing subpoena upon John G. Lieber, S. J. Anderson, L. A. Cory, R. S. Shanafelt and Huston A. Hogan, in the city of Muskogee, Muskogee County, Oklahoma, on September 25, 1925, by delivering to each of them a true and correct copy of said subpoena, Mrs. John G. Lieber was not served, being at this time out of Muskogee County.

My fees for service are $4.35.

H. L. Watts, Constable for Porter Township, Muskogee County, Oklahoma.

[fol. 1083] Cost Bill, Paid by Plaintiffs

| | |
|---|---|
| H. L. Watts, Constable, fee for serving subpoenas | $4.35 |
| Witness fees, paid L. A. Cory | 1.50 |
| Witness fees, paid S. J. Anderson | 1.50 |
| Witness fees, paid R. Shamfelt | 1.50 |
| Witness fees, paid John G. Lieber | 1.50 |
| Witness fees, paid Huston A. Hogan | 1.50 |
| Witness fees, paid L. W. Pitts | 1.50 |
| Fee of Notary Public, for taking deposition, transcribing same, 35 pages @ .50¢ per page | 17.50 |
| | $30.85 |

STATE OF OKLAHOMA,
County of Muskogee, ss:

I, E. K. Folsom, a Notary Public, in and for Muskogee County, State of Oklahoma, do hereby certify that the above cost bill is true and correct, and that the amounts set out therein were paid by the plaintiffs to the persons indicated, in my presence, on the 28th day of September, 1925.

E. K. Folsom, Notary Public. My Commission Expires Sept. 15, 1927. (Notarial Seal.)

Filed December 1, 1925. G. H. Marsh, Clerk.

Exhibit "A" to
deposition of
John G. Leiber.




A. Egg Chamber
B. Fan
C. Heating Pipe
D. Gas Burner
E. Perforated Partition or Fabric
Arrows indicate air movements

Exhibit "B" to deposition of Wm. G. Leiber

A. Egg chamber
B. Fan chamber
C. Heating chamber
D. Heating pipes or coils
E. Motor
F. Blower fan
G. Egg trays in position
H. Upper air conduit
I. Upper lateral conduit
J. Lower air conduit
K. Lower lateral conduits
L. Air passageway from B to C
M. Work space in front of incubator

**DEFENDANT S' EXHIBIT No. 8**

**DEFENDANT'S EXHIBIT D-P**

DEPARTMENT OF COMMERCE

PATENT OFFICE

*To all persons to whom these presents shall come, Greeting:*

THIS IS TO CERTIFY that the annexed is a true copy from the records of this office of the File Wrapper and Contents, in the matter of the

Letters Patent of

Samuel B. Smith, Assignor to
The Buckeye Incubator Co.,

Number 1,262,860, Granted April 16, 1918,

for

Improvement in Incubators.

IN TESTIMONY WHEREOF I have hereunto set my hand and caused the seal of the Patent Office to be affixed, at the City of Washington, this twenty-ninth day of September in the year of our Lord, one thousand nine hundred and twenty-five and of the Independence of the United States of America the one hundred and fiftieth.

ATTEST:

Chief of Division.

Thomas E. Robertson
Commissioner of Patents.

796

NUMBER (Series of 1915). 127915

1916

(EXR'S BOOK) 6 / 136 / 6

DIV. 38

PATENT No. 1262860

Name Samuel B. Smith
Assn to The Buckeye Incubator Co.
of Springfield, Ohio, a corp of Ohio

of Cleveland

County of

State of Ohio

Invention Incubators

| | ORIGINAL | RENEWED |
|---|---|---|
| Petition | Oct 26 1916 | 191 |
| Affidavit | " " 1916 | 191 |
| Specification | " " 1916 | 191 |
| Drawing 2 Shts | " " 1916 | 191 |
| Photo Copy | 191 | 191 |
| First Fee Cash | $15 Oct 26 1916 | 191 |
| " " Cert. | 191 | 191 |
| Appl. filed complete | Oct 26 1916 | 191 |

PARTS OF APPLICATION FILED

Examined and Passed for Issue Mar 8 1918
J. H. Ide Exr. Div. 38

Notice of Allowance Mch. 12 1918

Final Fee Cash $20 May 18 1918

" Cert. 191

Patented APR 16 1918

Attorney Staley & Bowman, Gotwald Bldg Springfield, Ohio

Associate Attorney Percy Norton, Springfield, Ohio

(No. of Claims Allowed 5) Title as Allowed Incubator

(OG Claims 1 and 5) 61 117-353

Division of App. No. 191 filed

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LAW OFFICES
STALEY & BOWMAN
ATTYS. AND PATENT CAUSES
SPRINGFIELD, O.

REC'D
OCT 24
1916
U.S. PATENT OFFICE

October 24th, 1916.

Commissioner of Patents,

Sir:-

We send you herewith an application of Samuel B. Smith for patent for improvements in Incubators. Enclosed is our check for $15.00 to cover the first fee thereon.

Respectfully,

STALEY & BOWMAN

CIW/B

1798

Paper No 1

MAIL ROOM
OCT
30
1916
U.S. PATENT OFFICE

# PETITION

TO THE COMMISSIONER OF PATENTS:

YOUR PETITIONER, Samuel B. Smith, a citizen of the United States, residing at Cleveland, in the County of Cuyahoga and State of Ohio, whose Post Office address is Cleveland, Cuyahoga County, Ohio, prays that Letters Patent may be granted to him for the IMPROVEMENT IN INCUBATORS set forth in the annexed specification; and he hereby appoints STALEY & BOWMAN [No. 5055,] a firm composed of Paul A. Staley and Border Bowman, of Springfield, Ohio, his Attorneys, with full power of substitution and revocation, to prosecute this application, to make alterations and amendments therein, to receive the Patent and to transact all business in the Patent Office connected therewith.

Samuel B. Smith

[illegible]

# SPECIFICATION

TO ALL WHOM IT MAY CONCERN:

Be It Known, That I, Samuel B. Smith, a citizen of the United States, residing at Cleveland, in the County of Cuyahoga and State of Ohio, have invented certain new and useful improvements in INCUBATORS, of which the following is a specification:

The improved apparatus and method, is particularly designed for extensive operations wherein a chamber of large dimensions is adapted to contain thousands of eggs in separate trays arranged in tiers and the method of heating is such that the heated air is adapted to the eggs in various stages of incubation. There is a forced circulation of hot air through the chamber which is adapted preferably to maintain all eggs at temperatures between 100° and 105° Fahrenheit approximately and this improved system contemplates that fresh eggs will be placed in a horizontal plane, preferably by means of trays supported in horizontal planes, and after the eggs have been subject to the circulation of hot air for a predetermined time (the air circulating largely around the eggs) they will be placed in a tilted or inclined position in a different location but still subject to the same column of air and at this period of incubation they will be tilted in different planes at regular intervals during the time they remain in this latter position, and after they have remained for a predetermined time they will be again moved to a different position with reference to the forced circulation of hot air and so placed therein that the air will tend to keep the eggs below 105° temperature, and in this last named position the air will be forced to pass between the different eggs and will in effect act as a cooling medium for the eggs.

In the accompanying drawings:

Fig. 1 is a cross section of my improved incubator.

Fig. 2 is a perspective view of one of the egg trays with one end removed to more clearly disclose the open mesh bottom.

Fig. 3 is a vertical section of the incubator on line 3--3, Fig. 1.

Fig. 4 is a perspective view of a portion of one of the tilting racks for the trays.

The invention comprises a walled chamber 2 corresponding in size to that of an ordinary room, say approximately nine feet

high, eight to ten feet wide, and of any desired length, and this chamber is subdivided longitudinally by two parallel rows of curtains 3 and 4 to provide a central compartment or corridor 5 and side compartments 6 and 7. Entrance to the corridor is gained by a door 8, and the compartments behind the curtains contain elevated stationary racks 9 which are within convenient reach of the attendant for introducing the fresh supply and from which elevated position the trays may be shifted at the proper time to a tier of tilting racks 10 on a lower plane and suspended therefrom by links 11. A series of stationary racks 12 are also arranged beneath the tilting racks 10, and all of said racks are of open construction and of the same size to permit interchange of the shallow trays 13 for the eggs to be hatched. These trays are provided with open mesh bottoms 14 upon which the smaller ends of the eggs rest in close and solid formation, and each tray of eggs occupies the upper rack 9 for the first three days, and is then transferred to a place in the upper end of the tilting rack 10. During the next fifteen days the trays in the tilting rack are shifted from higher to lower planes therein and tilted at frequent intervals to stand in oppositely-inclined positions. The tilting of the eggs is preferably arranged to put the eggs substantially on their sides. When the eggs in the lower-most trays in the tilting racks 10 are about ready to hatch each tray is transferred to the stationary rack 12 where the chicks may be removed as occasion requires.

Each tilting rack 10 comprises perpendicular corner bars 15 pivotally united by a series of cross bars 16 carrying connecting angle irons 17 extending from front to rear at each side and upon which the trays are adapted to be slidably supported. The links 11 are pivotally connected at the center of the uppermost cross bars 16 of each tilting rack, thus permitting an entire series of trays to be placed in an inclined position by merely raising or lowering one side of the rack by hand engagement. The weight and friction and balance of the parts cause the

to remain in any shifted position, whether horizontal or inclined. The fans or series of fans 18 mounted upon the hinged trap doors 19 forming the ceiling of the central corridor 5 constitute the means for forcing the hot air through the chamber and there are circular openings 20 provided in said doors within which the fans are arranged properly. The longitudinal space 21 above the fans has open communication above the side walls 22 with the upper ends of the rack compartments behind the curtains 3 and 4 and these curtains extend a sufficient distance, as indicated in Fig. 1, to cause the heated air distributed by the fans to pass downwardly through the central corridor to a point near the bottom of the chamber where it can pass into the space occupied by the trays. As explained later the trays near the bottom are preferably arranged so that the air is forced to pass between the eggs in each tray thereby cooling or holding the temperature of those eggs down. Thence the air passes into spaces above the lower series of trays until it reaches the distributing space 21 above the fan. Coils of heating pipe 23 are arranged in the space 21 to heat the air and more or less fresh air may be taken in through the valved opening 24 above the space 21 and this fresh supply of air may be charged with steam to a greater or less degree by means of a valve controlled jet or pipe 26 see Fig. 3. By lowering the hinged trap doors, the motor and fan are also easily reached for inspection, etc.

In Fig. 3 only a single curtain 3 is shown in place, the curtain or curtains at the right being entirely removed to disclose the racks and trays in full lines, and it will be also noted that the vertical spaces 27 between the adjacent tilting racks 10 are closed at their lower ends by flexible strips of fabric which are attached to and extend upward at each side of each rack so as to compel the air to circulate through the mesh bottom and around and about each egg as heretofore referred to, and as the eggs further advanced in incubation are contained in

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these lower trays and as the danger is that the temperature will rise in these eggs to a point injurious to incubation the improved method disclosed herein permits the circulating air to act as a medium to prevent the over heating at this stage of incubation and this is accomplished by promoting an induced draft within the lower trays. It is obvious that the fans can be so arranged and can be operated at such speed as to cause the hot air to circulate fast enough to keep the temperature throughout the chamber between the limits of 100° and 105°.

It, therefore, appears that the improved apparatus and method contemplates the application of hot air circulating in a column with such speed as to keep the temperature substantially uniform and so arranging the eggs that the fresh eggs are placed at one point in the column of air and held in a horizontal plane until they reach a predetermined stage of incubation and then put at a different point in the same column of air and kept in planes inclined to the horizontal and thereafter placed at such a point in the column of air that the forced draft of air acts to hold the eggs at a uniform temperature and to prevent them from becoming overheated and thereafter placing the eggs into final position for the hatching operation.

Any suitable thermostatic means may be employed for regulating the temperature, such for instance as a thermostat commonly employed in incubators of a well-known construction and illustrated in letters-patent No. 1,111,138, dated September 22, 1914, which thermostat may be suitably connected to the valve controlling the steam or hot water, as the case may be, which passes through the pipes 23.

Having thus described my invention, I claim:-

1. The method of hatching eggs by arranging the eggs in a column and applying heated air caused about the eggs, the heated air being adapted to the eggs in various stages of incubation.

2. The method of hatching eggs consisting of arranging the eggs in a column and forcing heated air about the eggs and having the eggs in the earliest stages of incubation at one place in the column arranged in substantially horizontal planes and the eggs in later stages of incubation arranged in planes inclined to the horizontal and at a different place in the same column of air, for the purpose specified.

3. The method of hatching eggs consisting of arranging the eggs in columns and applying heated air forced about the column of eggs, the eggs in different stages of incubation being placed in different parts of the column of heated air and the eggs in more advanced stages of incubation being arranged in tilted position for the purpose specified.

4. The method of hatching eggs, consisting of arranging the eggs in columns and applying heated air to said column of eggs, the air being forced through same and having the eggs in the earliest stages of incubation in one place in the column so arranged that the air can circulate around them and the eggs in the more advanced stages of incubation arranged at a different plane in the column of air whereby the air will be forced through and between the different eggs, for the purpose specified.

5. In an incubator, a chamber having racks and trays for the eggs, and a power-driven fan to produce a flow

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of heated air through said racks and trays.

6. In an incubator, a chamber having trays for the eggs arranged in tiers, and means to promote a draft of air through the trays containing the eggs in the last stages of incubation.

7. In an incubator, a chamber and trays for the eggs arranged in tiers therein, means to heat said eggs to incubation temperature, and means to circulate the air through each tier of trays.

8. In an incubator, a chamber, means to heat air and means to circulate the heated air within said chamber, a tilting rack within said chamber, and trays for the eggs carried by said rack.

9. In an incubator, a chamber having means to heat the air and means to circulate the heated air therein, and a hinge-jointed rack suspended in said chamber adapted to support a tier of egg-trays in differently-inclined positions.

10. In an incubator, a rack comprising parallel upright members having hinged cross pieces adapted to support separate trays at different elevations, and suspensory means in equalising pivotal connection with said rack adapting all the trays carried by said racks to be tilted to corresponding inclined positions.

11. In an incubator, a chamber and a rack and trays therein, a fan and means to operate the same to circulate air upwardly through said rack and trays, means to heat the air uniformly within said chamber, and means to regulate admission of fresh air into and foul air out of said chamber.

12. In an incubator, a chamber having a rack and egg trays removably mounted upon said rack, a power driven fan to circulate air through said chamber, means to heat the air within said chamber, and means to supply vapor for intermixture and circulation with said air.

13. In an incubator, a chamber having a series of racks therein and egg trays mounted in said racks, and means to circulate heated air into and through each rack and its trays.

14. In an incubator, a chamber having a series of tilting racks therein and egg trays mounted in tiers in each rack, means to enclose the space between the racks and tiers at the bottom of said racks, and means to circulate air through said bottom trays.

15. In an incubator, a chamber having a compartment provided with an air-circulating fan and a second compartment at one side of the first compartment having tiers of removable open egg trays and upper and lower communicating passages to permit circulation of air in the same direction continuously through said trays.

16. In an incubator, a chamber having a curtain subdividing it into two compartments, one of said compartments having tiers of egg-trays therein, a power driven fan in air-circulating communication with both compartments, and means to heat the air circulated by said fan.

17. In an incubator, a closed chamber having a curtained corridor and compartments at each side thereof and an upper air-distributing space, an air-circulating fan and means to heat the air in said upper space, and racks having removable

egg-trays superimposed in said side compartments.

14 18. In an incubator, a closed chamber having a compartment provided with a power driven fan hinged to swing downwardly from the ceiling thereof, and tiers of egg-trays in said chamber having open communication with said compartment adapted to circulate the air through said trays.

19. In an incubator, a compartmented chamber having separate tiers of open-bottomed egg-trays in one or more of the chamber compartments, means to produce a forced circulation of heated air within said compartmented chamber, and means to produce conflux of air-currents through one end of each tier of trays.

20. In an incubator, a compartmented chamber having an air-distributing space provided with a fresh-air intake, separate tiers of open-bottomed egg-trays in one or more of the compartments, a power driven fan to circulate heated air within said compartmented chamber, and means to produce conflux of air-current through the bottom of each tier of egg-trays.

21. In an incubator, a compartmented chamber having separate tilting racks provided with egg-trays having air passages in their bottoms, flexible enclosing means for said racks, and means to produce a forced circulation of heated air through said enclosed racks and egg-trays therein.

22. In an incubator, a compartmented chamber and a power-driven fan to circulate heated air therethrough, stationary egg-tray racks in the upper and lower portions of one chamber compartment and separate tilting egg-tray racks intermediate said upper and lower stationary racks.

23. In an incubator, a compartmented chamber having separate tilting racks provided with egg-trays having air passages in their bottoms, flexible enclosing means for said racks, and means to produce a forced circulation of heated air through said enclosed racks and the egg-trays therein.

24. In an incubator, a closed chamber having a central corridor provided with an air-distributing space in its upper portion and a power-driven fan in said space, curtains at each side of said corridor, separate stationary and tilting racks behind said curtains, egg-trays having open-mesh bottoms removably mounted upon said racks, and means to heat the air circulated through said chamber.

25. The method of hatching eggs by arranging the eggs in a column one above the other and forcing heated air through said column.

26. In an incubator changeable supporting means whereby eggs arranged in tiers one above the other may be changed in position sufficient to incubate.

27. In an incubator changeable supporting means whereby eggs arranged in tiers one above the other may be changed in position sufficient to incubate in a current of heated air forced through said tier and thermostatic means for controlling the temperature of said air.

28. In an incubator changeable supporting means whereby eggs arranged in tiers one above the other may be changed in position sufficient to incubate and thermostatic means for controlling the temperature of said eggs.

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In Testimony Whereof, I have hereunto set my hand this

day of October 1916.

WITNESSES

Hannah D Plaza

Ida M. Smith

Samuel B Smith

# OATH

State of Ohio
County of Clark } ss:

Samuel B. Smith

the above named petitioner, being duly sworn deposes and says that he is a citizen of the United States of America and resident of Cleveland, Cuyahoga County, Ohio; that he verily believes himself to be the original, first, and sole inventor of the improvement in

INCUBATORS

described and claimed in the annexed specification; that he does not know and does not believe that the same was ever known or used before his invention or discovery thereof, or patented or described in any printed publication in any country before his invention or discovery thereof, or more than two years prior to this application, or in public use or on sale in the United States for more than two years prior to this application; and that no application for patent on said improvement has been filed by him or his representatives or assigns in any country foreign to the United States.

Samuel B Smith

(Inventor sign here first name in full)

Sworn to and subscribed before me this 20th day of October 1916.

Guy E M Floyd
NOTARY PUBLIC

1099

Room 878 CDH 2-800 LDH Paper No. 2

DEPARTMENT OF THE INTERIOR
UNITED STATES PATENT OFFICE
WASHINGTON Nov. 1, 1916.

U.S. PATENT OFFICE
NOV. 1, 1916
MAILED

Staley & Bowman.
Cotwald Bldg.,
Springfield, O.

*Please find below a communication from the EXAMINER in charge of the application of*
Samuel B. Smith, Ser. No. 127,915, filed Oct. 26, 1916: Incubators.

Thomas Ewing
Commissioner of Patents.

Claims 1, 25 and 26 are rejected on each of

42 2

Morgan, 272,744, Feb. 20, 1883,
Class 119/40,
Winkler, 286,756, Oct. 16, 1883,
Class 119/35,
Bassini et al., 350,457, Nov. 17, 1885,
Class 119/42,
Campbell, 344,474, June 29, 1886,
X-ref. in same class,
Boyd, 828,181, Aug. 7, 1906,
Class 119/35,
VanKeuren, 1,160,795, Nov. 16, 1915,
Class 119/40, and the

German patents to

Mann, 117,089, Feb. 4, 1901,
Class 119/42, 1 sheet, and
Stulik, 155,917, Nov. 11, 1904,
Class 119/35, 1 sheet.

The references show the "column". The air is "forced" by the arrangement of the heating means which causes the heated air to rise and thus produces a circulation of air. The last two lines of Claim 1 are vague.

Claims 2, 3 and 4 are rejected on Stulik suggesting arranging the eggs in different places in the column at different periods of incubation in view of

Perkins, 745,458, Dec. 1, 1903,
Class 119/37, suggesting inclining some of the egg trays.

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Claims 5, 8 and 13 are rejected on Stulik in view of each of

Conant, 297,676, April 29, 1884,
X-ref. in Class 119/44, and
Christianson, 559,676, May 5, 1896,
X-ref. in same class, suggesting the racks, and of

Goldstein, 1,137,752, May 4, 1915,
X-ref. in Class 119/35 (see 12), suggesting the fan which otherwise does not involve invention as it is common to use such a fan to produce a circulation of air wherever desired.

Claims 6 and 7 are rejected on Stulik in view of Goldstein.

Claim 9 is rejected on Stulik in view of Goldstein and Christianson.

In Claim 10, line 4, what does "equalizing" mean? Claim 10 is otherwise allowed.

In Claim 11, line 5, before "foul" insert - and exit of - Claim 11 is rejected in the same manner as Claim 5 in view of each of

Morgan, 591,870, Oct. 19, 1897,
Class 119/42, and
Klinke, 949,653, Feb. 15, 1910,
Same class, suggesting the means to regulate.

Claim 12 is rejected on Stulik in view of Goldstein, of

Olson, 1,100,146, June 16, 1914,
X-ref. in Class 119/40, (see 4), suggesting the "means to supply vapor" and of

Bell, 691,837, Jan. 28, 1902,
Class 119/39, suggesting the "rack".

Claim 14 is rejected on Stulik in view of Goldstein and of Christianson suggesting mounting some of the egg trays on tilting racks.

Claims 15 and 16 are rejected on Stulik in view of Goldstein suggesting the fan, the second compartment and the continuous circulation. In Claim 16 the substituting of the curtain for the vertical partition does not involve invention.

Claim 17 is rejected on Goldstein in view of Van Keuren suggesting using the "corridor" of Goldstein(the space in which 11 is), to heat two chambers on each side, and of Bell, suggesting putting racks and trays in the side compartments. This gives the equivalent of the structure claimed.

In Claim 18, line 1, - closed - is misspelled. Lines 4 and 5, what is it that is "adapted to circulate air"?

Claim 18 is rejected on Campbell in view of Goldstein suggesting the "compartment" and "fan" to produce a continuous circulation of air. The specific mounting of the fan does not involve invention.

In Claim 19, line 4, what is the "means to produce conflux"? Claims 19 and 20, as far as understood, are rejected on Van Keuren.

In Claim 20, line 5, what is the "means to produce conflux"?

Claims 21 and 23 are rejected on VanKeuren in view of Goldstein and Christianson. This gives the equivalent of the structure claimed.

Claim 22 is rejected on Stulik in view of Goldstein suggesting the fan, of Van Keuren, suggesting the compartmented chamber and of Christianson, suggesting making some of the trays tilt.

Claim 24 is allowed.

Claims 27 and 28 are rejected on each of Morgan, Bassini et al., Campbell, Boyd and Stulik.

CDH

mcBeck
acting Ex

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U.S. PATENT OFFICE MAR 7 1917 DIVISION

MAIL ROOM MAR 1917 U.S. PATENT OFFICE

Paper No. 3

AMENDMENT A

Div. 38, Room 378.

Ser. No. 127,915.

Filed October 26, 1916.

Incubators.

Samuel B. Smith.

Commissioner of Patents,

Sir:—

Amend the above application as follows:

Page 1, line 8 for the words "between 98° and 106°" substitute between 100° and 108°; line 22 change "106°" to 105°; line 24 after the word "eggs" insert the following: the temperature of circulating air should be such as will prevent the eggs in the early stage of incubation from falling below 100° and the speed or velocity of the circulating air should be such as to carry the heat away from the eggs in the later stage of incubation and thereby hold the temperature of most eggs at 105° or slightly below that. It is manifest that the temperature will remain practically the same throughout the column of eggs, but the air is supplied with sufficient velocity to carry the heat away from the eggs which happen to be in the advanced stage of incubation.

Page 5, line 9 change "98° and 106°" to read 100° and 105°.

Claim 1, line 2 change "forced" to supplied.

Claim 2, line 2 and claim 3 line 2 before "about" insert the words through and.

Claim 18, line 1 correct the spelling of closed before the word "chamber"; line 5 erase all of the line and insert therefor to cause the air to circulate through the heater.

As to claims 19 and 20 means for causing the eggs

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flow of air currents are the flexible strips of fabric which are fully described at page 4 near the bottom thereof.

It is urged that the claims are now clear of criticisms as to form and that same represent patentable subject matter over the references.

As to claim 1 it must now be apparent that the novel method employed by applicant consists in arranging the eggs in columns and then using artificial means for impelling the air with sufficient velocity to keep the eggs in the advanced stage of incubation from becoming over-heated. The office says the last two lines of claim 1 are vague, but applicant urges that when read in the light of the specification and disclosure those lines are perfectly clear and bring out the fact that the heated air is impelled or driven so that it is adapted to the eggs in various stages of incubation. As explained in the specification, eggs near the top of the column are kept from falling below the temperature of 100° and the eggs near the bottom of the column are kept from rising materially above 105°. In other words the heated air is adapted to the condition of the eggs at the top of the column and at the bottom.

Now applicant notes that the Patent Office cites a reference to Goldstein, which does show the use of driven or impelled air in curing cigars, but says certainly there is no such method suggested as employed by applicant wherein he puts articles, such as eggs, in columns and then drives the air through the column in such manner that it will produce desirable results with the articles in various stages of incubation. Applicant was not merely trying to dry or cure the eggs. He was struggling with the problem of dealing with a very peculiar form of article which had within it animal life and in devising a way to apply a forced draft of heated air through such perplexing articles as eggs is certainly meritious. There is absolutely nothing in the use of impelled air with cigars which would in anyway suggest to one that it would be

of any advantage in incubating eggs.

There are a number of the claims wherein the Office overlooks the distinguishing feature of having the impelled air go through and about the individual eggs at one point in the column and at another and different point have the current of air driven about the container or trays.

Claim 6 illustrates the invention of applicant as contradistinguished from the use of a draft of air for drying or aging cigars. In that claim it appears that the eggs are arranged in tiers and the air is caused to circulate through the trays which contain the eggs in the last stages of incubation.

For the purpose of drying out or aging cigars it is apparent that there would be no necessity or advantage in driving the air through the container holding the cigars. It would be entirely sufficient to have the air circulate around the cigar containers. In fact in most cases there is simply moisture administered to the cigar container.

With the foregoing explanation it is believed that the Office will recognise the advantage brought about by applicant's invention and will allow the claims over the references.

It is therefore, urged that the claims should be allowed.

Respectfully submitted,

SAMUEL B. SMITH.

By his attorneys,

Staley & Brooman

Springfield, Ohio.
March 3, 1917.
RB/S.

1106

Room 578 CDE Paper No. 6

DEPARTMENT OF THE INTERIOR

UNITED STATES PATENT OFFICE

WASHINGTON March 24, 1917.

U.S PATENT OFFICE
MAR 24 1917
MAILED

Staley & Bowman,
Gotwald Bldg.,
Springfield, O.

*Please find below a communication from the EXAMINER in charge of the application of*

Samuel R. Smith, Ser. No. 127,915, filed Oct. 26, 1916: Incubator.

Thomas Ewing
Commissioner of Patents.

In response to the communication filed Mar. 6, 1917:

Claim 1 is rejected on each of Bassini et al., Campbell, Bell, and Boyd, suggesting eggs in a column and heated air that rises and passes around them, in view of each of

Endemann, 120,255, Oct. 24, 1871,
Class 34/59,
Jones, 152,644, June 30, 1874,
Same class, and
Verna, 891,019, June 16, 1908,
Same class (see 5 and 6), suggesting

the "impelling" the air. The last two lines do not state clearly that eggs of various stages are put in the columns. Moreover, it would involve no invention to put eggs of various stages into the column unless it is stated that eggs of different stages are arranged at different levels in the column. In the incubator references the heated air is "impelled" by its inferior density. The drier references suggest assisting this impelling force.

Claims 2 and 3 are rejected in the same manner as Claim 1 in view of Winkler, suggesting eggs of various stages of incubation arranged at different places in the column of air C(in Winkler air comes in through b and goes out through the openings in A) and of Christianson resting some eggs in inclined planes. This gives the process claimed as it would not be inconsistent with

the process disclosed in this claim to supply heat in the middle of the column of air.

Claim 4 is rejected in the same manner as Claim 3, omitting Christianson.

Claims 5, 6 and 7 are rejected in the same manner as Claim 1 and also on each of Endemann, Jones and Verna, showing all the structure claimed.

Claims 8 and 9 are rejected in the same manner as Claim 1 in view of Christianson.

The objections to Claims 10 and 11 are repeated.

Claim 10 is rejected on Christianson as far as understood. The suspending of the device does not distinguish from Christianson.

Claim 11, as far as correct, is rejected in the same manner as Claim 5, in view of each of Morgan and Klinke. Moreover, it is rejected in the same manner as Claim 6 as the "means to regulate" need include nothing more than hand operated cutoffs which it involves no invention generally to put anywhere. In Claim 11, line 4, "uniformly" is incorrect. It can not mean that the effect on the eggs is uniform since the air cools the eggs in the lower trays (see page 4, lines 15 to 16), while it heats the upper eggs. The temperature of the air is not the same throughout the column, since the temperature is raised by the lower trays of eggs and diminished by the upper, so that the temperature is higher part way up the tier at either the top or the bottom.

Claim 11 is further objected to as the structure which applicant intends to include by the phrase "means to heat uniformly" is already partly included by the fan and "means to operate".

Claim 12 is rejected on the same references as Claim 1 in view of Olsen, of record.

Claim 13 is rejected in the same manner as Claim 6.

In Claims 11 and 15 the trays of the references are supported by cleats which anticipate the "racks" as claimed. Means to support trays are common generally and are shown moreover in Bell.

In Claim 14, line 5, what is the "space between the racks and tiers"? If these tiers are those numbered 12, they should be better defined in the claim. This claim can not be well understood in its present form but seems to be met by the same references as Claim 9.

Claim 15 is rejected on each of Bassini et al., Campbell, Bell and Boyd in view of each of Jones et al. and Verna, suggesting the continuous circulation and also on each of Jones et al. and Verna, alone.

Claim 16 is rejected in the same manner as Claim 15. The curtain is not patentably different from any partition.

Claim 17 is rejected as for an incomplete combination as it does not bring out the structure definitely enough to show that the fan circulates air through the compartments or that air from the compartments goes into the air distributing space. As far as this claim states, the curtain might make a tight closure between the corridor and the compartments or they might let air from the corridor to the compartments at the top thereof. When this claim is made sufficiently definite, it will probably be allowed.

Claim 18 is not understood. What is it that is "adapted to cause"?

Claim 18 is rejected in the same manner as Claim 5, the specific location of the fan not involving invention.

In Claim 19, line 4, and Claim 20, line 5, "means to produce conflux" is incorrect as the word "conflux" is defined by the Standard dictionary to mean - "flowing together". There is no

"flowing together" at the bottom of the trays.

Claims 19 and 20 as far as correct are rejected in the same manner as Claim 15. Applicant has put drawers 6 in both compartments 4 and 5 of the Verna device. In these and other claims, to provide a plurality of compartments in the incubators would not involve invention even without its being suggested by Jones et al., and Verna.

Claims 21, 22, 23 and 24 are rejected in the same manner as Claim 8. The word "flexible" does not patentably distinguish Claims 21 and 23 from the references. To make some racks stationary and some tiltable as claimed does not involve invention unless it is stated that eggs are first put in the upper rack and moved down and that the air flows upward through the whole length of the racks and is not heated by additional heating means during its flow through the racks. Such amendments to Claim 22 are necessary to bring out the operation stated in the specification. In Claim 24 the arrangement of the "central corridor" and "air distributing space" does not involve invention. Claim 24 moreover does not state that the curtains permit any circulation of air from the corridor to the racks. This circulation of air should be included and defined.

Claim 25 is rejected in the same manner as Claim 1.

Claim 26 is rejected in the same manner as Claim 1 and also on each of Bassini et al., Campbell, Bell and Boyd alone. As far as this claims and Claims 27 and 28 disclose, eggs of various stages of incubation might be mingled in the same tray.

Claims 27 and 28 are rejected in the same manner as Claim 1. The "thermostatic means" is common in all incubators as shown in almost all the references of record.

As the references indicate, applicant has new matter in his application, but has not limited his claims sufficiently to bring it out.

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G. A. Isle, Exr.

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Paper No. 5
AMENDMENT B

Div. 38 Room 378

Ser. No. 127,915

Filed October 26th, 1916

INCUBATOR

S. B. Smith.

MAIL ROOM APR 7 1917 U.S. PATENT OFFICE

Commissioner of Patents,

Sir:-

Amend the application as follows:-

Claim 1 line 2 after the first word in the line insert the words of various stages of incubation; same line after "column" insert, the eggs in different stages of incubation being in different levels.

A.A.C.

Claim 2 line 3 after "eggs" (first word in the line) insert the words the air being impelled from the bottom upwardly; line 4 erase "at one place in" and insert the words at the upper part of.

Claim 3 line 3 after "eggs" (first time mentioned) insert the words the air being impelled upwardly throughout the column of eggs.

Claim 4 line 3 after "same" insert the words from the bottom of said column upwardly toward the top thereof.

Claim 5 line 3 after the word "trays" insert the words, the said fan being arranged to force the air from the bottom of the chamber upwardly around the trays to the top thereof.

A.A.C.

Claim 6 line 2 after "tiers" insert the words eggs at various stages of incubation; after the word "incubation" line 4 insert the words consisting of a fan arranged at the top of the chamber and arranged to impel the air from a point at the bottom of the trays to a point at the top thereof.

A.A.C.

Claim 7 line 4 insert after "trays" an air passage-way near the bottom of the trays whereby the air will be impelled from the bottom of the tier of trays to the top thereof.

A.A.C.

Claim 8 line 4 after "rack" insert the words said circulating means consisting of mechanically operated devices arranged at the top of the column for impelling the air downwardly and a passageway at the bottom of the column for impelling the air from the bottom of the chamber towards said tilting rack and thereafter upwardly.

Claim 9 line 4 after the word "positions" insert the words said circulating means comprising aprons for causing the air to circulate from the bottom of the chamber upwardly.

Claim 10 line 6 after "positions" insert the words and means for impelling the air to circulate from the bottom of the incubator upwardly through said racks.

Claim 11 line 8 after the word "air" insert the words from the bottom of the chamber; line 4 erase the word "uniformly" and insert the words in accordance with the particular stage of incubation of the eggs; after "chamber " same line insert consisting in part of passageways near the bottom of the chamber.

Erase claims 13, 14, 15 and 16.

Claim 17 line 4 after the word "space" insert the words an air passageway near the bottom of said chamber for impelling the air within the compartments whereby it will circulate upwardly.

Claim 18 line 3 after "egg-trays" insert having therein eggs in various stages of incubation; line 4 erase the words "having open communication down to and including the end of the claim and insert therefore an air passageway located near the bottom of said tiers of trays and communicating with said fan compartment whereby the air will be impelled by the fan to circulate from the bottom of the tier of trays to the top thereof.

Erase claims 19, 20, 21, 22, 23, 25, 26, 27 and 28.

Claim 24 line 4 after the word "corridor" insert the words arranged to permit the air to circulate from the bottom of the chamber into the part of the chamber behind the curtains.

It is urged that the claims are now corrected to bring out the invention disclosed by applicant and it is urged that the same should be allowed.

Respectfully submitted,

SAMUEL B. SMITH

By his attorneys,

Staley & Bowman

Springfield, Ohio.

April 5th, 1917.

1111 SB/AB

Rm. 878 CDH LDH Paper No. 6

DEPARTMENT OF THE INTERIOR
UNITED STATES PATENT OFFICE
WASHINGTON April 12, 1917.

U.S PATENT OFFICE
APR 12 1917
MAILED

Staley A Bowman.
Gotwald Bldg.,
Springfield, O.

*Please find below a communication from the EXAMINER in charge of this application of*
Samuel B. Smith, Ser. No. 127,915, filed Oct. 26, 1916: Incubators.

Thomas Ewing
Commissioner of Patents.

In response to the communication filed April 7, 1917:

Claims 1 and 4 are rejected on the same references as in the last office action, taken with Winkler, which suggests trays arranged with the newest at top and oldest at bottom but with heaters in the middle of the column. This would give the method claimed.

Claims 2 and 3 are rejected in the same manner as Claim 1 in view of Christianson.

Claim 5 is rejected on each of Bassini et al., Campbell, Bell and Boyd in view of each of Endermann, Jones and Verna, showing the fan.

Claims 6 and 7 are rejected in the same manner as Claim 1 and also in the same manner as Claim 5. The specific location of the fan does not involve invention.

Claims 8 and 10 are rejected in the same manner as Claim 6 in view of Christianson.

Claim 9 is objected to as the aprons do not cause the air to circulate upwardly unless they and the fan are more definitely located. Claim 9 is rejected in the same manner as Claim 8, omitting Endermann and Jones. Moreover, it is noticed

that in Fig. 2 of Verne the partition at the right of 16 has the same function as applicant's "apron" and might be made of cloth instead of wood or metal.

In Claim 10, line 4, "equalising" is not understood.

Claim 11 is rejected on the same references as Claim 1 in view of Morgan and Klinke showing "means to regulate" and also in the same manner as Claim 1 as the "means to regulate" involves no invention. The references from Class 54 show the fan and passageways. The phrase "means to heat the eggs in accordance with the particular stage of incubation of the eggs" is not very definite and is certainly shown in Winkler.

Claim 12 is rejected on the same references as Claim 5 in view of Olson, suggesting "means to supply".

Claim 15, original 17, should state that the air distributing space communicates with the corridor and the compartments, that there are two "air passageways" and that they connect the corridor with the compartments. When these, which applicant probably meant to include, have been included, this claim will probably be allowed.

Claim 14, original 18, is rejected in the same manner as Claim 6.

Claim 15, original 24, will probably be allowed if it is stated that the "air distributing space" communicates with both the corridor and the parts of the chambers behind the curtains.

CDH

G. R. Ide,
Exr.

U.S. PATENT OFFICE
APR 24 1917
DIVISION 38

MAIL ROOM
APR
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1917
U.S. PATENT OFFICE

Paper No. 7
Amendment C

Div. 38, Room 378.
Ser. No. 127,915.
Filed October 26, 1916.
Incubators.
Samuel B. Smith.

Commissioner of Patents,

Sir:--

Erase the claims 1 to 12 16

and substitute the following:

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Sub
D

1. The method of hatching eggs by arranging the eggs in various stages of incubation in a column, the eggs in different stages of incubation being in different levels, and applying heated air driven at a predetermined speed about the eggs whereby the heated air will be adapted to eggs in various stages of incubation.

2. The method of hatching eggs by arranging in one chamber eggs in various stages of incubation, the eggs in different stages of incubation being in different parts of said chamber, and applying heated air driven at a predetermined speed or velocity about all the eggs whereby the heated air will be adapted to eggs in various stages of incubation.

3. The method of hatching eggs, consisting of arranging eggs in various stages of incubation in an enclosure, the eggs in different stages of incubation being placed in different levels, and applying heated air to said eggs, said heated air being driven by mechanical means at a predetermined speed about the eggs to maintain same at a maximum degree of temperature of 105° and a minimum degree of 100°.

4. The method of hatching eggs by arranging eggs in

various stages of incubation in an enclosure and placing the eggs in different stages of incubation in different places in the enclosure, and thereafter forcing heated air at a predetermined speed or velocity about all the eggs whereby the eggs in the most advanced stages of incubation will be maintained at a degree of temperature less than 105° by the velocity of heated air, substantially as specified.

5. The method of hatching eggs by arranging eggs in various stages of incubation in an enclosure and placing the eggs in different stages of incubation in different places in the enclosure, and thereafter driving the heated air by mechanical means at a predetermined speed about all of the eggs and driving same through and between the eggs in the more advanced stage of incubation whereby the temperature of said eggs will be maintained at something less than 105° temperature, for the purpose specified.

6. The method of hatching eggs by arranging eggs in various stages of incubation in an enclosure and placing the eggs in different stages of incubation in different places in the enclosure, and thereafter driving the heated air by mechanical means at a predetermined speed about all of the eggs and driving same through and between the eggs in the more advanced stage of incubation whereby the temperature of said eggs will be maintained at something less than 105° temperature, said eggs in the more advanced stages of incubation being arranged in tilted position, for the purpose specified.

7. In an incubator, a chamber and trays for eggs arranged in tiers therein, means for applying heated air to said eggs, said circulating means comprising a mechanically operated device arranged at the top of the chamber for driving air downwardly and giving to said air a predetermined

speed or velocity whereby the eggs throughout the chamber will be maintained at a degree of temperature varying from 100° to 105°, the eggs in the more advanced stages of incubation being arranged at the point where the air is first applied to the eggs for the purpose specified.

Renumber claims 13 as No. 8 and at line 2 after the word "thereof" insert the following: a plurality of air passageways connecting said corridor with said compartments.

Erase claims 14.

Claim 15, line 4 after the word "curtain" insert passageways connecting the air distributing space with the corridor and the parts of said chamber behind the curtains.

* * * * * *

It is urged that the claims as now presented are clear of the references and same should be allowed.

The method employed by applicant is distinctly different from the method employed in the references and the claims are now drawn particularly to a method of hatching eggs as contradistinguished from drying fruits or other articles. While it is true that in Winkler the eggs are in various stages of incubation and ~~him~~ have heated air applied to them, there is no conception of applying the heated air with a predetermined speed or velocity that will adapt the heated air to the eggs in various stages of incubation. In Winkler's method there isn't any suggestion of giving heated air any predetermined speed or velocity. There is merely employed water jackets which heat the eggs and also the eggs move from place to place by means of carriers. It is obvious that the eggs in the advanced stages of incubation are not kept from advancing beyond the desirable temperature by the employment of any driving means for the heated air. The only mechanically operated mechanism in Winkler is the mechanism

for driving the eggs and that is distinctly different from applicant's conception which is that of driving the air in a way that will make it adapted to the eggs in all stages of incubation.

Now the references show the fans used for drying fruits, meats and similiar substances and do not in anyway suggest that there would be any advantage in using applicant's method of driving heated air with a predetermined velocity about the eggs that are in various stages of incubation. In drying fruits and meats it is merely necessary to have the air circulate about the fruits or means and that is the only purpose of using the fan whereas in applicant's method it is important to have the speed of the fan properly co-related to the heated eggs and by giving to the fan a predetermined velocity the eggs in the most advanced stages of incubation are prevented from becoming over heated.

It is believed that applicant has made a valuable contribution to the art of hatching eggs and he certainly does not claim to have attemplated anything in the art of drying fruits or meats and it is therefore urged that the claims should be allowed.

Respectfully submitted,

SAMUEL B. SMITH,

By his attorneys,

Springfield, Ohio.

April 20th, 1917.

EB/S.

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[illegible] 370 CDH 1900 LDH

Paper No. 8

All communications respecting this application should give the serial number, date of filing, title of invention, and name of the applicant.

DEPARTMENT OF THE INTERIOR

UNITED STATES PATENT OFFICE

WASHINGTON May 3, 1917.

U.S. PATENT OFFICE
May 3 1917
MAILED

Staley & Bowman,

Gotwald Bldg.,

Springfield, O.

Please find below a communication from the EXAMINER in charge of the application of

Samuel B. Smith, Ser. No. 127,916, filed Oct. 26, 1916: Incubators.

Thomas Ewing
Commissioner of Patents.

In response to the communication filed April 23, 1917:

Claims 1 and 2 are rejected on each of Morgan, Perkins, Boyd and Stulik in view of Winkler. In each of the first four references the temperature of the heated air in the column is kept the same by the thermostat that controls the heater which drives the air, so that the speed of driving the air is predetermined by adjusting the thermostat. Winkler suggests the "eggs in different stages of incubation being in different levels".

Claims 3, 4 and 5 are rejected in the same manner as Claim 1 in view of each of Endemann, Jones et al., and Verna, suggesting the "mechanical means".

Claim 6 is rejected on Perkins in view of Winkler and the references from Claim 34 and of Perkins suggesting the tilting of some of the eggs.

Claim 7 is rejected in the same manner as Claim 3. Winkler anticipates the last three lines.

Claim 8, original 17, is objected to as the passageways upwards under the curtains are included twice, once in the amendment of April 23, and once in the amendment of April 7. This claim should be rewritten.

Claim 9, original 24, is allowed.

CDH

G. R. Lee, Ext.

8/33

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Paper No. 9

Div. 36 Room 378

Ser. No. 127,915

Filed October 26th, 1916.

INCUBATORS

Samuel B. Smith.

Commissioner of Patents,

Sir:-

Please recognise Percy Morton of Springfield Ohio as our associate in the further prosecution of the above entitled application.

Staley & Bowman
Attorneys for said

Springfield, Ohio.
June 13th, 1917.
CLW/B

1119

Div. 18. Room 572.

Ser. No. 127,915.

Filed October [illegible] 1916.

Incubators.

Samuel P. [illegible].

Paper No. 10

Amendment D

Commissioner of Patents,

Sir:-

Amend the application as follows:

Erase claims 1 to 8 inclusive and insert the following:

1. The method of hatching a plurality of eggs in different stages of incubation by subjecting all of said eggs to heated air and by supplementing the natural draft of the heated air with the forced draft to increase the velocity of heated air about the eggs without changing the temperature of heated air whereby the units of heat will be carried from the eggs in the more advanced stage of incubation to those in a less advanced stage.

2. The method of hatching a plurality of eggs in different stages of incubation by subjecting all of said eggs to heated air and by using a forced draft to increase the velocity of heated air without changing the temperature whereby the units of heat will be carried away from the eggs in the more advanced stage of incubation to those in a less advanced stage for the purpose specified.

3. The method of hatching a plurality of eggs in different stages of incubation by subjecting all of said eggs to heated air and by supplementing a draft produced by mechanical means to increase the velocity of the air

without increasing the temperature thereof whereby the units of heat will be carried from eggs in more advanced stage to those in the less advanced stage of incubation.

Renumber claim 9 making it claim 4.

- - - - - - -

Pursuant to the interview with the examiner on Thursday of last week the following argument is repeated in support of the three new claims now submitted. The common practice of incubation has been to assemble the eggs with a heater in close proximity overhead and as the eggs advance in incubation the heat or radiation is diminished or the eggs moved away from the heater as they advance in incubation. In attempting to hatch a plurality of eggs arranged in trays one above the other it has been found that no matter where the heater is placed when the natural draft is employed, the difference in temperature between the upper and lower parts of the egg chamber is so great as to destroy the eggs. A great many experiments havebeen made to provide a natural draft that would equalize the temperature, but the best that could be accomplished disclosed a difference of about fifteen degrees between the upper and lower part of the egg chamber, whereas when a forced draft was employed a substantially equal temperature was maintained throughout the chamber, showing that the essential feature of the invention is a forced draft and applicant seems to be the first to employ a forced draft.

The references from remote arts in which a forced draft is employed for drying meats, vegetables, fruits, tobacco, etc., afford no suggestion as to meeting the condition of the advancing incubation of eggs.

Applicant seems to be the first to discover this essential feature and it has produced a great and successful change in the art. Indeed it has revolutionized poultry industry for applicant has had in successful operation

operation for the year last past a large incubator hatching thousands of eggs by which he dontimuously hatches eggs in great quantities giving him an output of chicks which, by reason of the reduced equipment less space is required for it and fewer attendants to operate it, so vastly decreases the cost of production over the old method that he has been able to sell the chicks to Five and Ten Cent stores throughout the country at such prices that they can and do retail them at ten cents each.

It is therefore urged that the claims should now be allowed and an early allowance is respectfully urged.

Respectfully submitted,

SAMUEL B. SMITH.

By his attorneys,

Staley & Brown

Springfield, Ohio,

June 20th, 1917.

BB/S.

832

Div. [illegible] Room [illegible] CDH [illegible] LDH Paper No. 11

Address only "The Commissioner of Patents, Washington, D. C.," and not any official by name.

All communications respecting this application should give the serial number, date of filing, title of invention, and name of the applicant.

DEPARTMENT OF THE INTERIOR

UNITED STATES PATENT OFFICE

WASHINGTON June 30, 1917.

Percy Norton,

Springfield,

O.

U.S. PATENT OFFICE
JUN 30 1917
MAILED

Please find below a communication from the EXAMINER in charge of the application of

Samuel B. Smith, Ser. No. 127,915, filed Oct. 26, 1916: Incubators.

Thomas Ewing
Commissioner of Patents.

In response to the communication filed June 28, 1917:

In Claim 1, line 4, change the first "the to - -

Attention is called to Figs. 1 to 5, inclusive, and 7 of

Koons, 916,454, Mar. 30, 1909,
Class 119/40, in which, if the pipes 54

were omitted, there would be a "natural draft" around 12, through 8 and out of the egg chamber as indicated by the arrows in Fig.1. The use of the pipes 54 adds a "forced draft" that increases the speed of the air but does not heat the air in 1. To arrange the eggs on the trays so that the air will first strike the eggs in the more advanced stage and then those in the less advanced stage is suggested by Winkler.

Claims 1, 2 and 3 are rejected as explained and also on

Scott, 709,650, Sept. 23, 1902,
Class 119/40, having a "forced draft"

produced by 22 in view of Winkler suggesting using a plurality of trays to produce the mode of operation in the last three lines. These claims are also rejected on Boyd in view of each of Scott and Koons suggesting connecting the part A of Boyd to the heater to get a forced draft and of Winkler, suggesting putting the more advanced eggs in the lower tray.

In Claim 3, "mechanical means" does not distinguish from the structure of the references. Even if it did, there would be no invention in a method claims, in substituting a fan for the draft forcing means of Koons and Scott.

Claim 4, original 24, stands allowed.

CDH

G. R. Ice

Div. 38 Room 378

Paper No 12

Application No. 127,915

Affidavit

AMENDMENT & Exhibit

Filed October 26th, 1916.

INCUBATORS

Samuel B. Smith.

Commissioner of Patents,

Sir:-

Please amend the above entitled application as follows:-

Line 23, page 4 after "Fig. 3" insert the outlets 28 for the release of foul air are made of such restricted capacity as to prevent the undue escape of moisture. It is possible to limit the openings and so conserve the moisture by reason of the vitalizing effect of the power driven current upon the body of the air within the chamber.

Please place the numeral 28 with proper lead lines on Figs. 1 and 3 of the drawings to indcate outlets as per order sent herewith.

Substitute the following for claims 1, 2 and 3.

1. The method of hatching a plurality of eggs by arranging them at different levels in a closed chamber having restricted openings of sufficient capacity for the escape of foul air without undue loss of moisture and applying a current of heated air, said current being created by means other than variations of temperature and of sufficient velocity to circulate, diffuse and maintain the air throughout the chamber at substantially the same temperature, whereby the air will be vitalized, the moisture conserved and the units of heat will be carried from the eggs in the more advanced stage of incubation to those in a less advanced stage for the purpose specified.

2. The method of hatching a plurality of eggs by arranging them at different levels in a closed chamber having restricted

openings of sufficient capacity for the escape of foul air without undue loss of moisture and applying a power driven current of heated air in an adjacent chamber through openings into the egg chamber, said current being of sufficient velocity to circulate, diffuse and maintain the air throughout the egg chamber at substantially the same temperature, whereby the air will be vitalized, the moisture conserved and the units of heat will be carried from the eggs in the more advanced stage of incubation to those in a less advanced stage for the purpose specified.

3. The method of hatching a plurality of eggs by arranging them at different levels in a closed chamber having restricted openings of sufficient capacity for the escape of foul air without undue loss of moisture and applying a vertically directed current of heated air in an adjacent chamber to circulate in said egg chamber through upper and lower openings between said chambers, said current being created by mechanically moving means of such velocity as to diffuse and maintain the air throughout the egg chamber at substantially the same temperature whereby the air will be vitalised, the moisture conserved and the units of heat will be carried from the eggs in the more advanced stage of incubation to those in the less advanced stage for the purpose specified. 3527

Please add the following claim:-

5. In an incubator, a closed chamber with a vertically disposed partition to provide a corridor having upper and lower passage ways to said chamber, egg trays arranged at different levels in said chamber, a power driven fan creating a current in said corridor to circulate through said passage ways and egg trays, said chamber having restricted openings of sufficient capacity for the discharge of foul air without undue loss of moisture and means to heat the air circulated through said chamber.

- - - -

Natural drafts seek and follow the same paths and when employed in incubators leave untouched areas of the egg chamber. This causes an uneven distribution of the heat and a variation of tempera-

fore that makes it impossible to successfully hatch eggs placed at different levels; and this is equally true of induced drafts caused by heating outlet pipes of the egg chamber. Convincing proof of this is found in the affidavit of George Cugley filed herewith.

Applicant by the introduction of a current produced by mechanical means distributes and diffuses the heat throughout the egg chamber and gives an even temperature in all parts of the chamber whereby it is possible to place the eggs at different levels; but this is not all; it is essential that a sufficient amount of moisture be retained for successful incubation and to that end the outlets for escape of foul air are restricted. The vitalising effect of agitating the air within the chamber by a power driven current makes possible the use of restricted outlets and the moisture is thereby conserved within the chamber.

The induced drafts of the new references are for the purpose of freeing the incubator of foul air. Such drafts not only follow certain paths leaving areas of the chamber untouched as heretofore pointed out; but they entirely exhaust the moisture from the egg chamber and thereby destroy the hatch. There is a vast difference - just the difference that distinguishes success from failure - between the old art of natural and induced drafts and the power driven current of applicant with its restricted outlets giving a uniform temperature, vitalizing the air and conserving the moisture in the air within the egg chamber.

While it is true the egg conveyor of Winkler is arranged with one section above another he depends entirely on having a separate heater for each section adapted to the stage of incubation of the eggs in its section. Furthermore although his patent was issued as far back as 1883 his construction is not known on the market today showing it could not have been a success. It lacks the essential features that have made the device of applicant a success.

The so-called Mammoth Incubators of recent years are all made with the egg trays in the same horizontal plane. In other words, the old units are simply multiplied each having a

single tray, the combination making an incubator of great length, whereas by the method of applicant the egg trays can be placed in column allowing the incubator to be built in compact form, so that the material employed, cost of construction and space required is vastly less and the cost of fuel and attendants to operate is proportionately reduced.

Applicant's incubator is clearly distinguished in that a power driven current is employed to establish a uniform temperature throughout the area of the egg chamber whereby the eggs can be placed at different levels and the restricted outlets conserve the moisture in the chamber, this restriction and conservation being made possible by the vitalizing effect of the power driven current.

Applicant has discovered a new method of successfully hatching eggs continuously in large numbers and should be protected in it. An allowance is respectfully urged.

Respectfully,

SAMUEL B. SMITH

By his attorneys,

Springfield, Ohio.
February 9th, 1918.

Div. 38 Room 378

Appln. No. 127,915

Filed October 26th, 1916.

INCUBATORS

Samuel B. Smith

State of Ohio, County of Cuyahoga, ss:

Samuel B. Smith being duly sworn deposes and says he is the applicant in the above entitled application; that the subject-matter of the foregoing amendment was part of his invention, was invented before he filed his original application, above identified, for such invention, was not known or used before his invention, was not patented or described in a printed publication in any country more than two years before his application, was not patented in a foreign country on an application filed more than twelve months before his application, was not in public use or on sale in this country for more than two years before the date of his application and has not been abandoned.

Samuel B Smith

Sworn to and subscribed before me this 14th day of February 1918.

Stella Jones
Notary Public

MY COMMISSION EXPIRES
JANUARY 31 1919

838 State of Ohio, } ss
Clark County, }

George Cagley being first duly sworn says that he has been for many years engaged in the incubator business both as a dealer and manufacturer; that he is president of the Buckeye Incubator Company, of Springfield, Ohio, and gives his active personal attention to the conduct of the business, including experimental work and the adopting of improvements in the product of said company; that said company has been engaged in the manufacture of incubators for 28 years and has constantly been engaged in making experiments with various types of incubators and that to his knowledge other manufacturers have been engaged in like manner; that it is a matter of common knowledge to those familiar with the art that to successfully hatch eggs they must be maintained at substantially the same temperature throughout the period of incubation; that all attempts to obtain a satisfactory hatch from eggs placed at different levels in a chamber having natural drafts or drafts induced by variation in temperature have been a failure for the reason that such drafts seek and follow the same paths leaving areas of the chamber untouched so that the same temperature cannot be maintained at different levels in the chamber; and as convincing proof of this affiant points to the fact that all manufacturers of incubators today, other than affiant's company which is building incubators in accordance with the device of applicant, place the eggs on the same level and this is true even in the so called Mammoth Incubator of recent years which simply multiply the units and place all the eggs of the several units on the same level.

Affiant further says that United States Letters Patent No. 916454 granted V.C. Koons, March 30, 1909, having been called to his attention he constructed an incubator in accordance with the invention of said patent and conducted a series of experiments

1

1129

with same; that he had photographs made of said incubator and the same are hereto attached marked Nos. 1, 2, 4 and 5 and further had a phantom drawing made which is hereto attached and marked No. 3; that No. 1 is an outside view, No. 2 is same with door open showing interior with three egg trays, No. 4 shows the position of the thermometers in each tray, No. 5 shows bottom of single tray with the position of the thermometers in said tray, the position of the thermometers being alike in each tray and No. 3 is a phantom view showing the heating device 1 with its heating drum 2 projecting into the heating chamber of the incubator, 3 is a water pan having openings 4 for escape of moisture, 5 are the egg trays, 6 are the fresh air inlets, 7 the air passages from the heating chamber to the egg chamber, and 8 the outlet tubes opening into a jacket 9 formed about the chimney of heater 1.

Affiant further says that during a period extending from September 19th to October 9, 1917, he operated said incubator making a series of tests, records of which are shown in Charts marked A, B, C, D, and E hereto attached by which it will be seen there was a wide variation of temperature both vertically and horizontally in the egg chamber showing that eggs could not be successfully hatched; and affiant particularly points out that in the test of September 21, 1917, marked "A" and the test of October 9, 1917, marked "E" were made with the outlet tubes removed, whereas the test of September 27, 1917, marked "B", September 29, 1917, marked "C" and October 3, 1917, marked "D" were made with the outlet tubes in place showing the induced drafts of the patent created a greater variation of temperature in the egg chamber which would be more disastrous to the hatch than when natural drafts were employed.

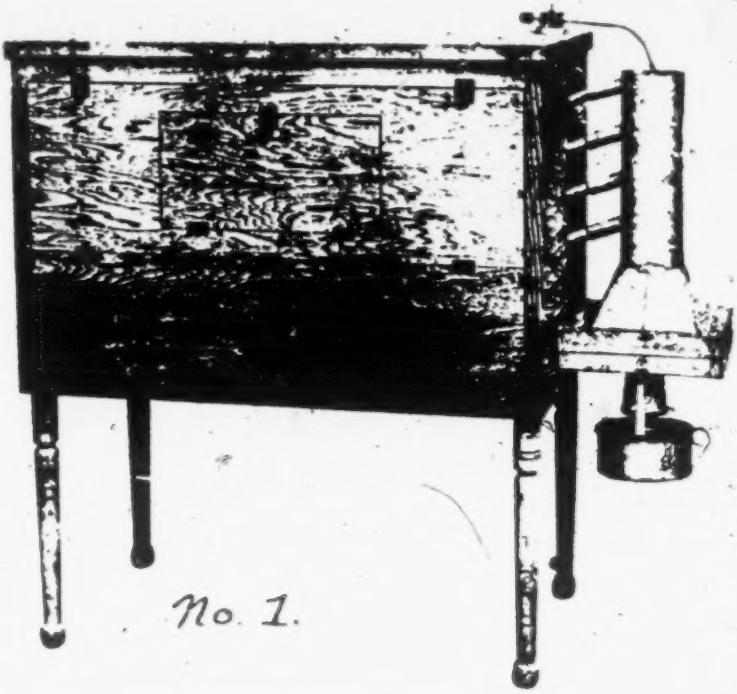
Affiant further says that moisture in the egg chamber is an essential element of a successful hatch and that an induced draft created at the outlets by variations of temperature as provided in the Rooms' construction would in his opinion so exhaust the moisture as to destroy the hatch.

George Lindsay

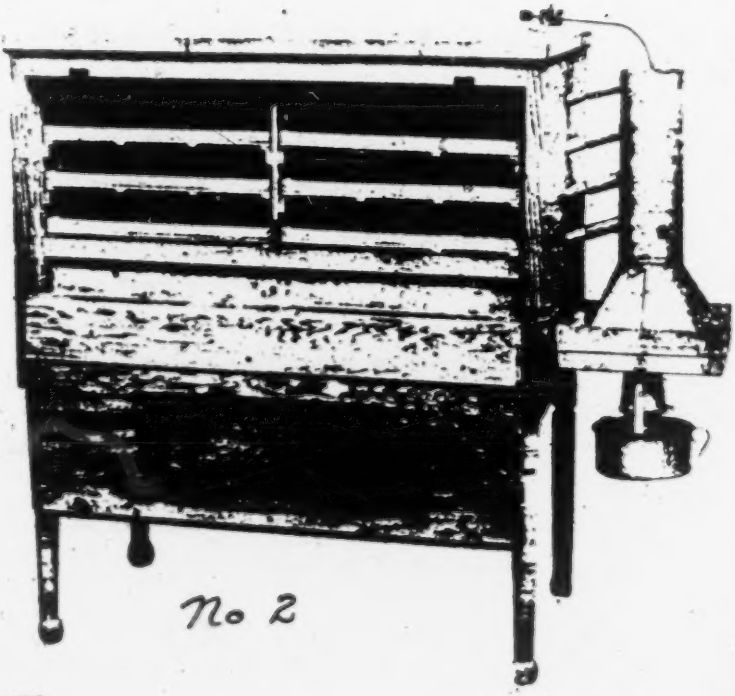
Sworn to and subscribed before me this 22nd day of February 1918.

1130

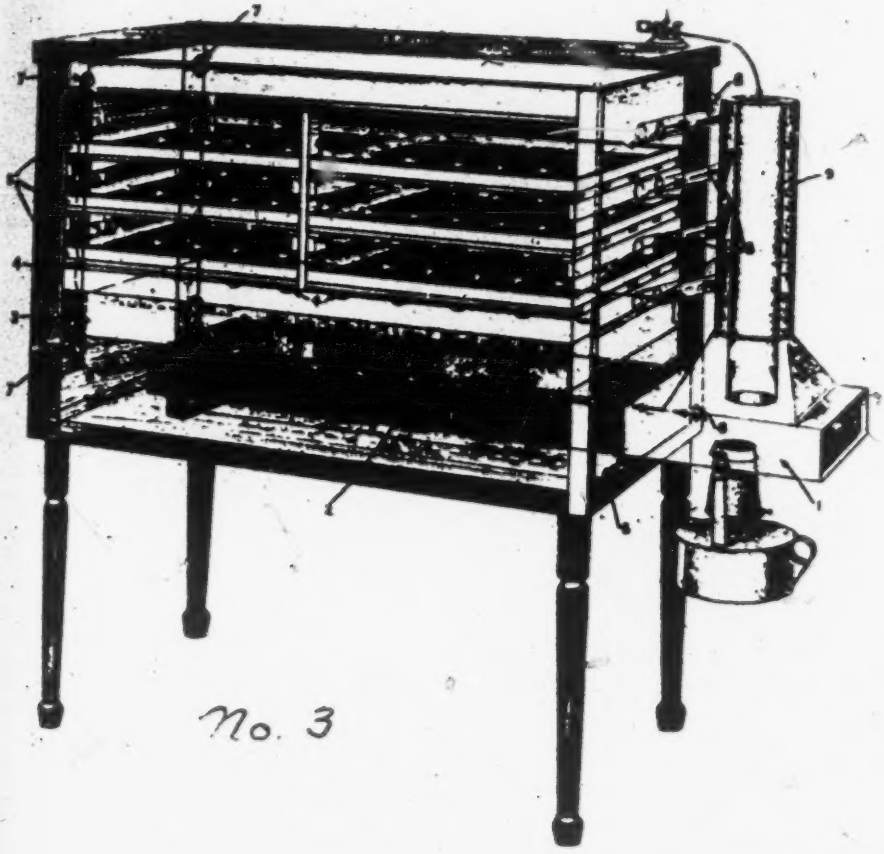
H. W. Mackinnon
Clerk Public



No. 1.



No 2



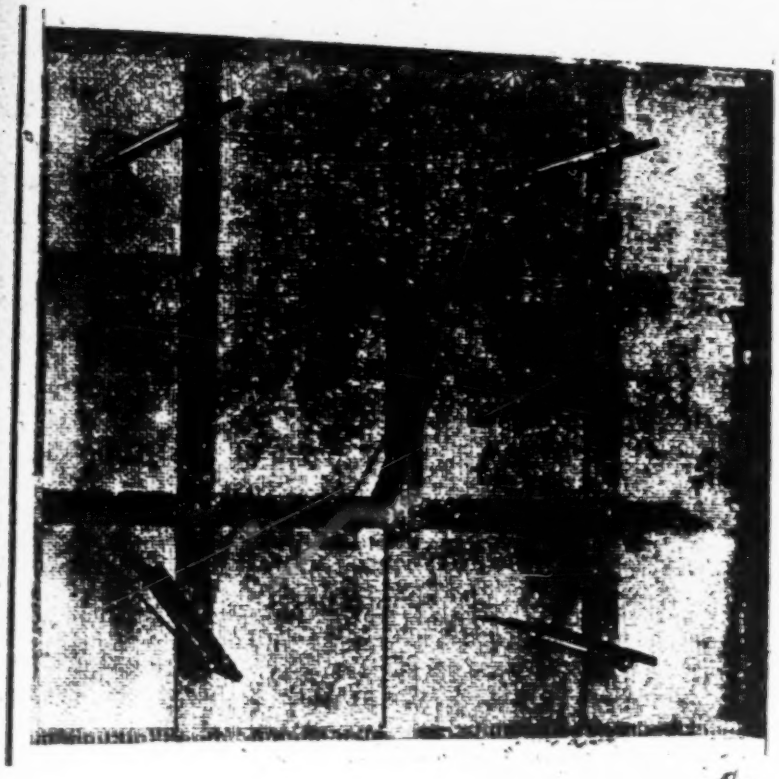
No. 3

842

No. 4.

1133

No. 5

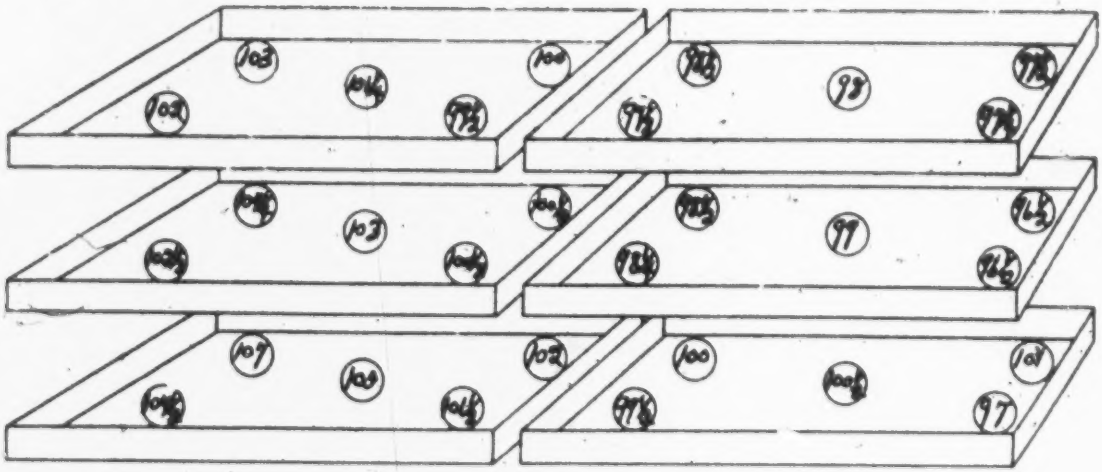


1134

Sept. 21 – 1917
9 A. M.
Temp. of Room 72

"A"

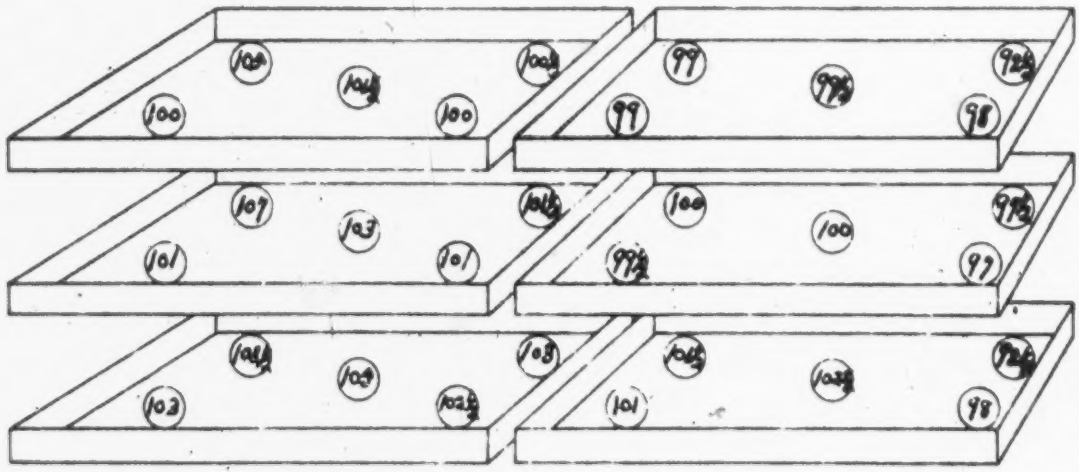
U. C. Woods Incubator
Strays – Tubes disconnected from stack



Sept. 27–1917
Temp. of Room 70°

"B"

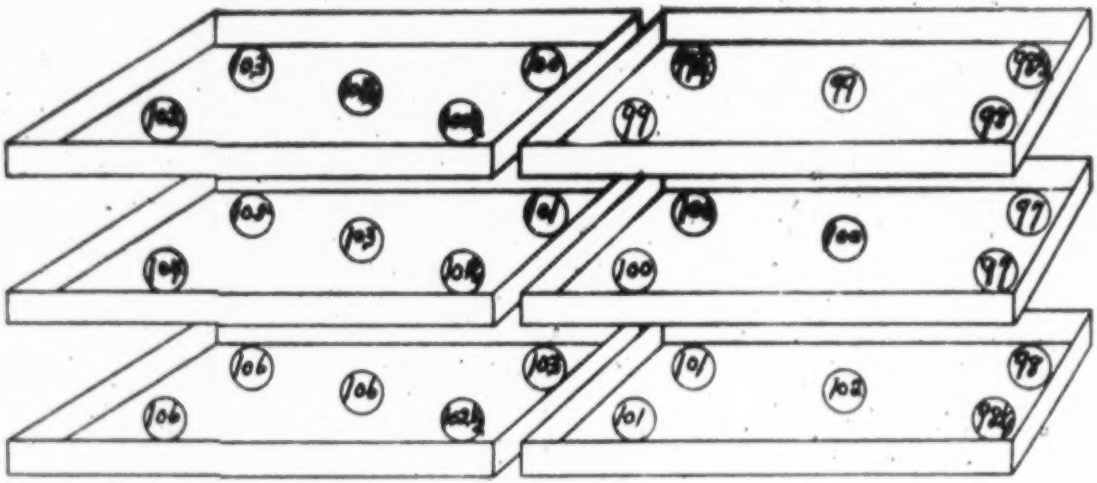
U. C. Koons Incubator
3 trays = 4 draught tubes connected with stack.



Sept 29—1917
Temp of Room 70°

"C"

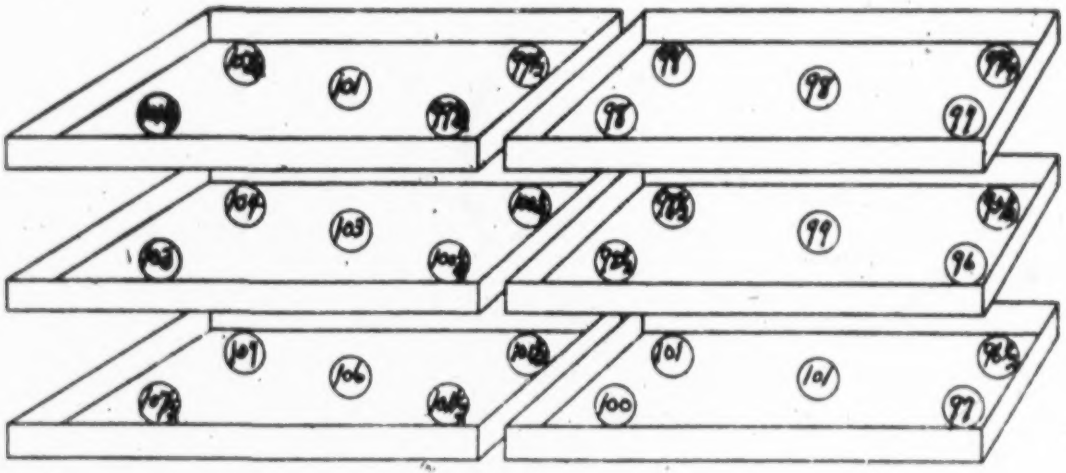
U.C. Koons Incubator.
3 trays—4 draught tubes connected with stack.



October 3-1917
Temp. of Room 70°

"II"

U. S. Koona Incubator
3 Trays - 4 draught tubes connected with stack.



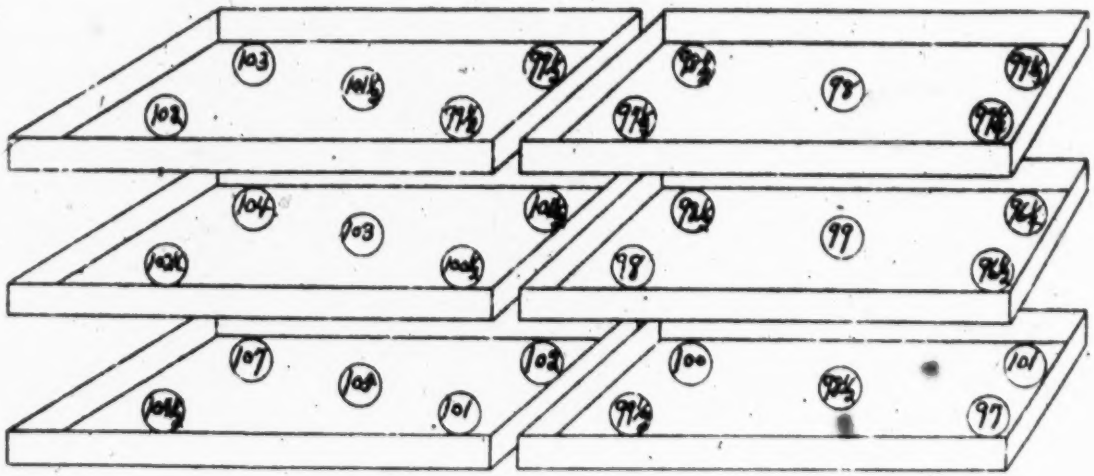
1138

847

October 9—1917
Temp of Room 70°

E

U. C. Koons Incubator.
3 trays — draught tubes disconnected.



Div. 38 Room 378
Appn. No. 127915.
Filed Oct. 26, 1916.
Incubators.
Samuel D. Smith.

Commissioner of Patents,
Washington, D. C.

Sir: In the above entitled application please place the numeral 28 with proper lead lines on Figs. 1 and 3 of the drawings to indicate outlets as per enclosed blue print.

Respectfully,

Samuel B. Smith
By Staley & Bowman
Percy Norton

Springfield, Ohio

2 PRINT RETURNED
BY DRAFTING DIV

850

ADDRESS ONLY
THE COMMISSIONER OF PATENTS,
WASHINGTON, D.C.

K.O'D. 2-121

Serial No. 127,915

DEPARTMENT OF THE INTERIOR

UNITED STATES PATENT OFFICE

WASHINGTON March 12, 1918.

Samuel B. Smith, Assoc.

Sir: Your APPLICATION for a patent for an IMPROVEMENT in Incubators,

filed Oct. 26, 1916, has been examined and ALLOWED.

The final fee, TWENTY DOLLARS, must be paid not later than SIX MONTHS from the date of this present notice of allowance. If the final fee be not paid within that period, the patent on this application will be withheld, unless renewed with an additional fee of $15, under the provisions of Section 4897, Revised Statutes.

The office delivers patents upon the day of their date, and on which their term begins to run. The printing, photolithographing, and engrossing of the several patent parts, preparatory to final signing and sealing, will require about four weeks, and such work will not be undertaken until after payment of the necessary fee.

When you send the final fee you will also send, DISTINCTLY AND PLAINLY WRITTEN, the name of the INVENTOR, TITLE OF INVENTION, AND SERIAL NUMBER AS ABOVE GIVEN, DATE OF ALLOWANCE (which is the date of this circular), DATE OF FILING, and, if assigned, the NAMES OF THE ASSIGNEES.

If you desire to have the patent issue to ASSIGNEES, an assignment containing a REQUEST to that effect, together with the FEE for recording the same, must be filed in this office on or before the date of payment of final fee.

After issue of the patent uncertified copies of the drawings and specifications may be purchased at the price of FIVE CENTS EACH. The money should accompany the order. Postage stamps will not be received.

Final fees will NOT be received from other than the applicant, his assignee or attorney, or a party in interest as shown by the records of the Patent Office.

Respectfully,

J. T. Newton

Thomas Ewing

Commissioner of Patents.

Percy Norton,

Springfield, Ohio.

IN REMITTING THE FINAL FEE GIVE THE SERIAL NUMBER AT THE HEAD OF THIS NOTICE.

UNCERTIFIED ORDERS WILL NOT BE ACCEPTED.

1141

LAW OFFICES
STALEY & BOWMAN
PATENTS AND PATENT CAUSES
SPRINGFIELD, O.

RECD MAR 18 1918

March 16th, 1918.

Commissioner of Patents,

Sir:-

We hand you herewith check for $20.00 in payment of the final government fee on the application of

Samuel B. Smith
Ser. No. 127,915
Filed October 26th, 1916
INCUBATORS
Allowed March 12th, 1918
Patent to issue to
The Buckeye Incubator Company.

Respectfully,
STALEY & BOWMAN

CDE/AB

852

# United States District Court

#13

DISTRICT OF Oregon.

HONORABLE COMMISSIONER OF PATENTS,
Washington, D. C.

Sir:

In compliance with the Act of February 18, 1922 (42 Stat. L. 392), you are advised that there was filed on the 23rd day of February, 1922, in this court an action, suit, or proceeding No. E-8881, entitled:

Name Buckeye Incubator Company and Samuel B.Smith, Plaintiff,
Address Incubator Co.,Springfield,Ohio; Smith, Cleveland,Ohio.
versus
Name Archie E.Sione, Defendant,
Address Corvallis, Oregon.

brought upon the following patents:

| | PATENT NO. | DATE OF PATENT | PATENTEE |
|---|---|---|---|
| 1 | 1,263,158 | April 16,1918 | Buckeye Incubator Company. |
| 2 | 1,262,860 | April 16,1918 | Buckeye Incubator Company. |
| 3 | | | |
| 4 | | | |
| 5 | | | |

In the above-entitled case, on the ____ day of ____, 192 , the following patents have been included by ____ (insert amendment, answer, cross bill, or other pleading):

| | PATENT NO | DATE OF PATENT | PATENTEE |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| 5 | | | |

In the above-entitled case the following decision has been rendered or decree issued:

In witness whereof I have affixed my hand this 12th day of April, 1922, at Portland,Oregon.

G. H. March
Clerk of said Court.

1143

NEW ROOM
8 SEP 1932
U.S. PATENT OFFICE



# United States District Court

#16

Western *District of* Wisconsin

HONORABLE COMMISSIONER OF PATENTS,
Washington, D. C.

Sir:

In compliance with the Act of February 18, 1922 (42 Stat. L. ____), you are advised that there was filed on the 9th day of July, 1932, in this court an action, suit, or proceeding No. 2109-Equity entitled:

Name Samuel B. Smith, Plaintiff,

Address Cleveland, Ohio

VERSUS

Name Raymond Clark, Harvey Clark, & Mabel Clark, administratrix of, Defendant, the Estate of James Newman Clark, Deceased, d.b.a. Clark's Hatchery,

Address Meridean, Wisconsin

brought upon the following patents:

| PATENT NO. | DATE OF PATENT | PATENTEE |
|---|---|---|
| 1. 1,262,860 | Apr. 16, 1918 | The Buckeye Incubator Company (Assigned to Samuel B. Smith on April 29, 1927) |
| 2. | | |
| 3. | | |
| 4. | | |
| 5. | | |

In the above-entitled case, on the ____ day of ____, 19__, the following patents have been included by ____ (insert amendment, answer, cross bill, or other pleading):

| PATENT NO. | DATE OF PATENT | PATENTEE |
|---|---|---|
| 1. | | |
| 2. | | |
| 3. | | |
| 4. | | |
| 5. | | |

In the above-entitled case the following decision has been rendered or decree issued:

Sept. 21, 1932. Filed Final Decree signed by Hon. F. A. Geiger, approved by plaintiff and defendant, and stating in part as follows:
(see other side)

In witness whereof I have affixed my hand this 21st day of September, 1932, at Madison, Wisconsin

H. C. Hale
Clerk of said Court.

854

MAIL ROOM JUN 7 1926 U.S. PATENT OFF

# United States District Court

#13 (2)

*District of* Oregon

HONORABLE COMMISSIONER OF PATENTS,
Washington, D. C.

SIR:

In compliance with the Act of February 18, 1922 (42 Stat. L. ), you are advised that there was filed on the 23rd day of February, 1926, in this court an action, suit, or proceeding No. E 8591, entitled:

Name The Buckeye Incubator Co. and Samuel B. Smith, Plaintiff,

Address Springfield and Cleveland, Ohio, respectively

versus

Name Archie E. Stone, Defendant,

Address Corvallis, Oregon

brought upon the following patents:

| | PATENT NO. | DATE OF PATENT | PATENTEE |
|---|---|---|---|
| 1 | 1,262,860 | April 16,1918 | Buckeye Incubator Company |
| 2 | 1,263,138 | April 16,1918 | Buckeye Incubator Company |
| 3 | | | |
| 4 | | | |
| 5 | | | |

In the above-entitled case, on the day of , 192 , the following patents have been included by (insert amendment, answer, cross bill, or other pleading):

| | PATENT NO. | DATE OF PATENT | PATENTEE |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| 5 | | | |

In the above-entitled case the following decision has been rendered or decree issued:

On June 1, 1926, decree entered enjoining defendant et al from infringing any of claims of said letters patent.

In witness whereof I have affixed my hand this 1st day of June, 1926, at Portland, Oregon.

G. M. Marsh,
Clerk of said Court.

1145

9/60 By [signature] Chief Deputy

# United States District Court #14

DISTRICT OF Ohio Eastern Division

HONORABLE COMMISSIONER OF PATENTS,
Washington, D. C.

SIR:

In compliance with the Act of February 18, 1922 (~~41~~ 42 Stat. L 392), you are advised that there was filed on the 13th day of July, 1923, in this court an action, suit, or proceeding No. 939, entitled: Equity

Name Samuel B. Smith, Cleveland, Ohio, Plaintiff,
Address The Buckeye Incubator Company, a corporation, Springfield, Ohio

Name J. W. Miller; The Bussyrus Hatchery Company, a corporation; Frank M. Smith, [illegible] C. Miller; Charles F. Ott; Samuel Neff; Nell T. Smith; Volley Graham, all of Bussyrus, Ohio, Defendant,
Address

brought upon the following patents:

| | PATENT NO. | DATE OF PATENT | PATENTEE |
|---|---|---|---|
| 1 | 1,262860 | April 16, 1918 | Samuel B. Smith |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| 5 | | | |

In the above-entitled case, on the ..... day of ....., 192 ..., the following patents have been included by ..... (insert amendment, answer, cross bill, or other pleading):

| | PATENT NO. | DATE OF PATENT | PATENTEE |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| 5 | | | |

In the above-entitled case the following decision has been rendered or decree issued:

In witness whereof I have affixed my hand this 13th day of July, 1923, at Cleveland, Ohio

B. C. Miller
Clerk of said Court.

J. Heywood Ramie
Deputy Clerk

856

# United States District Court

#4

Northern DISTRICT OF Ohio, Western Division

HONORABLE COMMISSIONER OF PATENTS,
Washington, D. C.

Sir:

In compliance with the Act of February 18, 1922 (42 Stat. L. 392), you are advised that there was filed on the 4 day of June, 1923, in this court an action, suit, or proceeding No. 401 entitled:

Name The Buckeye Incubator Co, Plaintiff,
Address Springfield, Ohio

versus

Name Claude M. Lower, Defendant,
Address Bryan, Ohio

brought upon the following patents:

| | PATENT NO. | DATE OF PATENT | PATENTEE |
|---|---|---|---|
| 1 | 1,262,860 | April 16, 1918 | Samuel B. Smith |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| 5 | | | |

In the above-entitled case, on the _____ day of _____, 192 , the following patents have been included by _____ (insert amendment, answer, cross bill, or other pleading):

| | PATENT NO. | DATE OF PATENT | PATENTEE |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| 5 | | | |

In the above-entitled case the following decision has been rendered or decree issued:

June 30, 1923. Decree for complainant

In testimony whereof I have affixed my hand this 25th day of October, 1923, at Toledo, Ohio.

D. C. MILLER
CLERK U. S. DISTRICT COURT
By J. R. Wilson
DEPUTY CLERK

1147

127915-62

10-(a)

# United States District Court

Northern DISTRICT OF Ohio

Western Division

HONORABLE COMMISSIONER OF PATENTS,
Washington, D. C.

Sir:

In compliance with the Act of February 18, 1922 (42 Stat. L. 392), you are advised that there was filed on the 4 day of June, 1923, in this court an action, suit, or proceeding No. 400, entitled:

Name The Buckeye Incubator Co., Plaintiff,
Address Springfield, Ohio

Name The Miracle Incubator Co., Defendant,
Address Fostoria, Ohio

brought upon the following patents:

| PATENT NO. | DATE OF PATENT | PATENTEE |
|---|---|---|
| 1. 1,762,860 | April 16, 1918 | Samuel B. Smith |
| 2. | | |
| 3. | | |
| 4. | | |
| 5. | | |

In the above-entitled case, on the 18 day of October, 1923 the following patents have been included by _____ (insert amendment, answer, cross bill, or other pleading):

| PATENT NO. | DATE OF PATENT | PATENTEE |
|---|---|---|
| 1. | | |
| 2. | | |
| 3. | | |
| 4. | | |
| 5. | | |

In the above-entitled case the following decision has been rendered or decree issued:
Decree for Complainant, entered on October 18, 1923

In testimony whereof I have affixed my hand this 25th day of October, 1923, at Toledo Ohio

E. C. MILLER
CLERK U.S. DISTRICT COURT
By J. H. Hahn
Deputy Clerk
DEPUTY CLERK

858

# United States District Court

DISTRICT OF ILLINOIS.

#16

HONORABLE COMMISSIONER OF PATENTS,
Washington, D. C.

16

SIR:

In compliance with the Act of February 18, 1922 (42 Stat. L. 392), you are advised that there was filed on the 8th day of November, 1923, in this court an action, suit, or proceeding No. 261, entitled:

Name The Buckeye Incubator Co., Springfield, Ohio, and
Address Samuel B. Smith, of Cleveland, Ohio, Plaintiffs,

Name Otto Kuehl, Defendant,
Address Minonk, Woodford County, Illinois,

brought upon the following patents:

| PATENT NO. | DATE OF PATENT | PATENTEE |
|---|---|---|
| 1 1,262,860 | April 16, 1918. | |
| 2 | | |
| 3 | | |
| 4 | | |
| 5 | | |

In the above-entitled case, on the _____ day of _____ 192 , the following patents have been included by _____ (insert amendment, answer, cross bill, or other pleading):

| PATENT NO. | DATE OF PATENT | PATENTEE |
|---|---|---|
| 1 | | |
| 2 | | |
| 3 | | |
| 4 | | |
| 5 | | |

In the above-entitled case the following decision has been rendered or decree issued:

In witness whereof I have affixed my hand this 8th day of November, 1923, at Peoria, Illinois.

E. J. Burnett
Clerk of said Court.

1149

12791-64

# United States District Court

17

NORTHERN DISTRICT OHIO (Eastern Division)

HONORABLE COMMISSIONER OF PATENTS,
Washington, D. C.

Sir:

In compliance with the Act of February 18, 1922 (42 Stat. L. 392), you are advised that there was filed on the 12th day of March, 192 4, in this court an action, suit, or proceeding No. 1048, entitled:

Name The Buckeye Incubator Co. and Samuel E. Smith, Plaintiff

Address Springfield, O., Cleveland, Ohio

DEFEND

Name Charles Mowary, Defendant,

Address Loudonville, Ashland Co., Ohio

brought upon the following patents:

| PATENT NO. | DATE OF PATENT | PATENTEE |
|---|---|---|
| 1 1,263,138 | Apr. 16, 1918 | Buckeye Incubator Co., |
| 2 1,269,860 | Apr. 16, 1918 | do do do |
| 3 | | |
| 4 | | |
| 5 | | |

In the above-entitled case, on the _____ day of _____, 192

the following patents have been included by _____ (insert amendment, answer, cross bill, or other pleading):

| PATENT NO. | DATE OF PATENT | PATENTEE |
|---|---|---|
| 1 | | |
| 2 | | |
| 3 | | |
| 4 | | |
| 5 | | |

In the above-entitled case the following decision has been rendered or decree issued:

In testimony whereof I have affixed my hand this 12th day of March, 192 4, at Cleveland, Ohio

B. C. MILLER,
Clerk of said Court.

By R. A. Weller, Deputy.

1150

860

# United States District Court

1048

District of Northern Ohio ( Eastern Division)

#17(4)

HONORABLE COMMISSIONER OF PATENTS,
Washington, D. C.

SIR:

In compliance with the Act of February 18, 1922 (42 Stat. L. 392), you are advised that there was filed on the 15th day of March, 1924, in this court an action, suit, or proceeding No. 1048, entitled:

Name The Buckeye Incubator Co. and Samuel B.Smith, Plaintiff,

Address Springfield Ohio. Cleveland Ohio

versus

Name Charles Mowery, Defendant,

Address Loudonville, Ashland Co., Ohio

brought upon the following patents:

| | PATENT NO. | DATE OF PATENT | PATENTEE |
|---|---|---|---|
| 1. | 1,265,138 | Apr. 16,1918 | Buckeye Incubator Co |
| 2. | 1,262,860 | Apr. 16, 1918 | " " " |
| 3. | | | |
| 4. | | | |
| 5. | | | |

In the above-entitled case, on the ____ day of ____, 19__, the following patents have been included by ____ (insert amendment, answer, cross bill, or other pleading):

| | PATENT NO. | DATE OF PATENT | PATENTEE |
|---|---|---|---|
| 1. | | | |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| 5. | | | |

In the above-entitled case the following decision has been rendered or decree issued:
Final decree
Apr.25,1924,by consent, defendants, agents, etc.,be enjoined from infringing the patents, or any of them, that are set up in the Bill of Complaint, Costs to be paid by plaintiffs. D.C.Westenhaver,Judge.

In testimony whereof I have affixed my hand this 15th day of October, 1924, at Cleveland, Ohio

B.C.Miller
Clerk of said Court.

By G.L.Patterson
Deputy

1151

# United States District Court

#18

EASTERN DISTRICT OF WASHINGTON

HONORABLE COMMISSIONER OF PATENTS,
Washington, D. C.

Sir:

In compliance with the Act of February 18, 1922 (42 Stat. L. 392), you are advised that there was filed on the 11th day of June, 1924, in this court an action, suit, or proceeding No. 1284, entitled:

Name The Smokeye Incubator Co., Plaintiff,

Address Springfield, Ohio

DEFENDANT

Name John Moorehead, Defendant,

Address Granger, Washington

brought upon the following patents:

| PATENT NO. | DATE OF PATENT | PATENTEE |
|---|---|---|
| 1 1262860 | April 16,1918 | Samuel B. Smith |
| 2 1263138 | " " " | Samuel B. Smith |
| 3 | | |
| 4 | | |
| 5 | | |

In the above-entitled case, on the _____ day of _____, 192 , the following patents have been included by _____ (insert amendment, motion, cross bill, or other pleading):

| PATENT NO. | DATE OF PATENT | PATENTEE |
|---|---|---|
| 1 | | |
| 2 | | |
| 3 | | |
| 4 | | |
| 5 | | |

In the above-entitled case the following decision has been rendered or decree issued:

_____

_____

_____

In testimony whereof I have affixed my hand this 11th day of June, 1924, at Yakima, Washington.

C. A. Robinson
Deputy Clerk of said Court.

862

# United States District Court

18(a)

DISTRICT OF

HONORABLE COMMISSIONER OF PATENTS,
Washington, D. C.

SIR:

In compliance with the Act of February 18, 1922 (41 Stat. L. ), you are advised that there was filed on the 11th day of June, 1924, in this court an action, suit, or proceeding No. 1284, entitled:

Name The Buckeye Incubator Co and S B Smith, Plaintiff,
Address Springfield, Ohio

versus

Name John Moorehead, Defendant,
Address Grangeville, Washington

brought upon the following patents:

| PATENT NO. | DATE OF PATENT | PATENTEE |
|---|---|---|
| 1 1263138 | April 16, 1918 | Buckeye Incubator Co. |
| 2 1262860 | April 16, 1918 | Buckeye Incubator Co. |
| 3 | | |
| 4 | | |
| 5 | | |

In the above-entitled case, on the 26 day of August, 1924, the following patents have been included by answer (insert amendment, answer, cross bill, or other pleading):

| PATENT NO. | DATE OF PATENT | PATENTEE |
|---|---|---|
| 1 1263138 | April 16, 1918 | Buckeye Incubator Co. |
| 2 1262860 | April 16, 1918 | |
| 3 | | |
| 4 | | |
| 5 | | |

In the above-entitled case the following decision has been rendered or decree issued:

Consent decree filed on Sept 3, 1925.

In witness whereof I have affixed my hand this 15th day of September, 1925, at Spokane Wash.

[signature]
Clerk of [illegible]

1153

#19

# United States District Court

DISTRICT OF Eastern Washington

HONORABLE COMMISSIONER OF PATENTS,
Washington, D. C.

Sir:

In compliance with the Act of February 18, 1922 (42 Stat. L. 392), you are advised that there was filed on the 8 day of July, 1924, in this court an action, suit, or proceeding No. 1286, entitled:

Name Buckeye Incubator Co., Plaintiff,
Address Springfield, Ohio

DEFENDANT

Name E. E. Wells, Defendant,
Address Prosser, Wash.

brought upon the following patents:

| PATENT NO. | DATE OF PATENT | PATENTEE |
|---|---|---|
| 1 1263128 | April 16 1918 | Buckeye Incubator Co. |
| 2 1426186 | " " " | " " " |
| 3 | | |
| 4 | | |
| 5 | | |

In the above-entitled case, on the _____ day of _____, 192 , the following patents have been included by _____ (insert amendment, answer, cross bill, or other pleading):

| PATENT NO. | DATE OF PATENT | PATENTEE |
|---|---|---|
| 1 | | |
| 2 | | |
| 3 | | |
| 4 | | |
| 5 | | |

In the above-entitled case the following decision has been rendered or decree issued:

In witness whereof I have affixed my hand this 8 day of July, 1924, at Yakima, Wash.

C. C. Robinson
Deputy Clerk of said Court.

864

# United States District Court

1925

DISTRICT OF ..... 19(a)

HONORABLE COMMISSIONER OF PATENTS,
Washington, D. C.

SIR:

In compliance with the Act of February 18, 1922 (41 Stat. L. ), you are advised that there was filed on the 5th day of July, 1924, in this court an action, suit, or proceeding No. 1286, entitled:

Name Buckeye Incubator Co. and Samuel B. Smith, Plaintiff
Address Springfield, Ohio

DEFENDANT

Name E. A. Wells, Defendant
Address Prosser Washington

brought upon the following patents:

| PATENT NO. | DATE OF PATENT | PATENTEE |
|---|---|---|
| 1. 1263138 | April 16, 1918 | Buckeye Incubator Co. |
| 2. 1262860 | | |
| 3. | | |
| 4. | | |
| 5. | | |

In the above-entitled case, on the 5th day of December, 1925, the following patents have been included by answer (insert amendment, answer, cross bill, or other pleading):

| PATENT NO. | DATE OF PATENT | PATENTEE |
|---|---|---|
| 1. 1263138 | April 16 1918 | Buckeye Incubator Co. |
| 2. 1262860 | " " " | " |
| 3. | | |
| 4. | | |
| 5. | | |

In the above-entitled case the following decision has been rendered or decree issued:

Consent decree filed on Sept. 4, 1925

In witness whereof I have affixed my hand this 15 day of September, 1925, at Spokane Wash.

Alan F. Pain
(Clerk of ...)

1155

# United States District Court #20

Southern DISTRICT OF Illinois. (Northern Div.)

HONORABLE COMMISSIONER OF PATENTS,
Washington, D. C.

Sir:

In compliance with the Act of February 18, 1922 (42 Stat. L. 392), you are advised that there was filed on the 19th day of August, 1924, in this court an action, suit, or proceeding No. 292, entitled:

Name The Buckeye Incubator Company and Samuel B.Smith, Plaintiff,s,
Address Buckeye Company, at Springfield, O., and Samuel B.Smith, at Cleveland, Ohio.
DEFENDANTS

Name F. & H. Hatchery, (Inc.) Farrow & Hirsch Company, [redacted],
David T. Farrow and Abraham Hirsch,
Address Peoria, Illinois.

brought upon the following patents:

| | PATENT NO. | DATE OF PATENT | PATENTEE |
|---|---|---|---|
| 1. | 1,262,860 | April 16, 1918. | The Buckeye Incubator Company. |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| 5. | | | |

In the above-entitled case, on the _____ day of _____, 192 the following patents have been included by _____ (insert amendment, answer, cross bill, or other pleading):

| | PATENT NO. | DATE OF PATENT | PATENTEE |
|---|---|---|---|
| 1. | | | |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| 5. | | | |

In the above-entitled case the following decision has been rendered or decree issued:

In witness whereof I have affixed my hand this 19th day of August, 1924, at Peoria, Illinois.

E. T. Burnett
Clerk of said Court.

866

9-5-24

# United States District Court

WESTERN District of Missouri

HONORABLE COMMISSIONER OF PATENTS,
Washington, D. C.

SIR:

In compliance with the Act of February 18, 1922 (42 Stat. L. 392), you are advised that there was filed on the 28 day of September, 1924, in this court an action, suit, or proceeding No. 565, entitled:

Name The Buckeye Incubator Co. and Samuel B. Smith, Plaintiff,

Address Springfield and Cleveland, Ohio

versus

Name E. L. Rusk, P. M. Rusk and D. W. Rusk, Defendant,

Address Windsor, Missouri

brought upon the following patents:

| PATENT NO. | DATE OF PATENT | PATENTEE |
|---|---|---|
| 1. 1,242,860 | April 16, 1918 | The Buckeye Incubator Co. |
| 2. 1,265,138 | " " | " |
| 3. | | |
| 4. | | |
| 5. | | |

In the above-entitled case, on the ..... day of ....., 19..., the following patents have been included by ..... (insert amendment, answer, cross bill, or other pleading):

| PATENT NO. | DATE OF PATENT | PATENTEE |
|---|---|---|
| 1. | | |
| 2. | | |
| 3. | | |
| 4. | | |
| 5. | | |

In the above-entitled case the following decision has been rendered or decree issued:

.....

.....

In witness whereof I have affixed my hand this 28 day of September, 1924, at Kansas City, Missouri.

Edwin R. Durham
Clerk of said Court

1157

# United States District Court

#21867

DISTRICT OF INDIANA

HONORABLE COMMISSIONER OF PATENTS,
Washington, D. C.

Sir:

In compliance with the Act of February 18, 1922 (42 Stat. 392 ~~41 Stat. L.~~ ), you are advised that there was filed on the 13th day of August, 1924, in this court an action, suit, or proceeding No. 812, entitled:

Name Buckeye Incubator Co., Plaintiff,

Address Springfield, Ohio

DEFEND

Name Bert Bolling, Defendant,

Address Brownstown, Ind

brought upon the following patents:

| | PATENT NO. | DATE OF PATENT | PATENTEE |
|---|---|---|---|
| 1 | 1,262,860 | Apr 16, 1918 | Buckeye Incubator Co. |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| 5 | | | |

In the above-entitled case, on the ____ day of ____, 192 the following patents have been included by ____ (insert amendment, answer, cross bill, or other pleading):

| | PATENT NO. | DATE OF PATENT | PATENTEE |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| 5 | | | |

In the above-entitled case the following decision has been rendered or decree issued:

Pending

In witness whereof I have affixed my hand this 23d day of September, 1924, at Indianapolis

William R. Kopp
Clerk of said Court.

1158

868

FORM 2 ROOM AUG 28 1926 PATENT OFFICE

Notice as to Additional Patents

#22(4)

United States District Court
District of Indiana
Indianapolis Division

August 20, 1926

THE BUCKEYE INCUBATOR CO ET AL

1,262,860

VS 812

BERT BOLLING

To the Commissioner of Patents
Washington, D C

Sir:

In compliance with the Act of Feb 18 1922 notice is hereby given as to the above entitled action:

1. On Oct 12, 1924 there was filed an answer whereby there were included in the action additional patents having the following designating numbers, dates and inventors:

| Patent Nos | Dates of Patents | Inventors |
|---|---|---|
| 3,019, | Guerin, | March 30, 1843 |
| 120,253, | Endemann | October 24, 1871 |
| 152,644 | Jones | June 30, 1874 |
| 272,744 | Morgan | February 20, 1883 |
| 286,756 | Winkler | October 16, 1883 |
| 297,676 | Conant | April 29, 1884 |
| 320,463 | Cutting | June 23, 1885 |
| 330,457 | Bassini | November 17, 1885 |
| 344,474 | Campbell | June 29, 1886 |
| 559,676 | Christianson | May 5, 1896 |
| 591,870 | Morgan | October 19, 1887 |
| 691,837 | Bell | January 28, 1902 |
| 709,650 | Scott | September 23, 1902 |
| 725,049 | Hawkins | April 14, 1903 |
| 745,458 | Perkins | December 1, 1903 |
| 828,181 | Boyd | August 7, 1906 |
| 886,355 | Osborn, April | April 28, 1908 |
| 891,019 | Verna | June 16, 1908 |
| 916,454 | Koons | March 30, 1909 |
| 949,653 | Klinke | February 15, 1910 |
| 1,075,747 | Zimmer | October 14, 1912 |
| 1,100,146 | Olson | June 16, 1914 |
| 1,137,752 | Goldstein | May 4 1915 |
| 1,160,793 | Van Keuren | November 16, 1915 |
| 1,165,958 | Freas | December 28, 1915 |

Respectfully,

William P Kappes

Clerk

1159

127915

FORM 3 MAIL ROOM AUG 23 1926 PATENTS Notice of Decision #2218

United States District Court
District of Indiana
Indianapolis Division

August 18, 1926

THE BUCKEYE INCUBATOR CO ET AL

VS

BERT BOLLING

812 Equity

To the Commissioner of Patents
Washington, D C

Sir:

In compliance with the Act of Feb 18 1922 notice is hereby given as to the above entitled action:

1. On February 8, 1926 the following decision was rendered:

Bill Dismissed for want of Equity. Judgment against plaintiff for costs.

1,262,860 April 16, 1918 Buckeye Incubator Co

Respectfully,
William P Kappes

William P Kappes
Clerk

1160

870

# United States District Court

DISTRICT OF KANSAS

13

HONORABLE COMMISSIONER OF PATENTS,
Washington, D. C.

Sir:

In compliance with the Act of February 18, 1922 (42 Stat. L. 392), you are advised that there was filed on the 18th day of October, 1924, in the court an action, suit, or proceeding No. 627-K, entitled:

Name The Buckeye Incubator Co. and Samuel A. Smith, Plaintiffs

Address Springfield, Ohio

DEFEND

Name Claude Jones, Defendant,

Address Clay Center, Kansas

brought upon the following patents:

| | PATENT NO. | DATE OF PATENT | PATENTEE |
|---|---|---|---|
| 1 | 1,261,138 | April 16,1918 | The Buckeye Incubator Company |
| 2 | 1,262,860 | April 16,1918 | The Buckeye Incubator Company |
| 3 | | | |
| 4 | | | |
| 5 | | | |

In the above-entitled case, on the _____ day of _____, 192 , the following patents have been included by _____ (insert amendment, answer, cross bill, or other pleading):

| | PATENT NO. | DATE OF PATENT | PATENTEE |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| 5 | | | |

In the above-entitled case the following decision has been rendered or decree issued:

In witness whereof I have affixed my hand this 2nd day of October, 1924; at Topeka, Kansas

J. Campbell
Clerk of said Court.

(J. L. Campbell)

1161

OCT 11 1924 PATENT OFFICE

# United States District Court #24

Western DISTRICT OF Michigan So. Div.

HONORABLE COMMISSIONER OF PATENTS,
Washington, D. C.

SIR:

In compliance with the Act of February 18, 1922 (~~41~~ 42 Stat. L. 392), you are advised that there was filed on the 13th day of March, 1924 in this court an action, suit, or proceeding No. 2007, entitled:

Name Buckeye Incubator Company Chal, Plaintiffs
Address Springfield, Ohio

versus

Name William R. Brott, Defendant,
Address Mason, Michigan

brought upon the following patents:

| | PATENT NO. | DATE OF PATENT | PATENTEE |
|---|---|---|---|
| 1 | 1,262,860 | April 16, 1918 | Buckeye Incubator Co., Assignee |
| 2 | 1,263,138 | " " " | " " " " |
| 3 | | | |
| 4 | | | |
| 5 | | | |

In the above-entitled case, on the _____ day of _____, 192 ., the following patents have been included by _____ (insert amendment, answer, cross bill, or other pleading):

| | PATENT NO. | DATE OF PATENT | PATENTEE |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| 5 | | | |

In the above-entitled case the following decision has been rendered or decree issued:

Interlocutory Decree awarding injunction and accounting. Both patents held valid and infringed

In witness whereof I have affixed my hand this 9th day of October, 1924, at Grand Rapids, Mich.

Chas. L. Fitch
Deputy Clerk of said Court.

127915-75

872

$20

# United States District Court

NORTHERN
District of ILLINOIS.

HONORABLE COMMISSIONER OF PATENTS,
Washington, D. C.

Sir:

In compliance with the Act of February 18, 1922 (42 Stat. L. 392), you are advised that there was filed on the 16th day of September, 1924, in this court an action, suit, or proceeding No. 4275, entitled:

Name The Buckeye Incubator Co and Samuel B. Smith, Plaintiff,
Address Springfield, Ohio. Cleveland, Ohio.

AGAINST

Name Paul Schaeffer, Defendant,
Address Crystal Lake, McHenry Co., Ill.

brought upon the following patents:

| PATENT NO. | DATE OF PATENT | PATENTEE |
|---|---|---|
| 1. 1,262,860 | April 16, 1918. | Samuel B. Smith |
| 2. 1,263,138 | April 16, 1918. | Samuel B. Smith. |
| 3. | | |
| 4. | | |
| 5. | | |

In the above-entitled case, on the ____ day of ____, 19__, the following patents have been included by ____ (insert amendment, answer, cross bill, or other pleading):

| PATENT NO. | DATE OF PATENT | PATENTEE |
|---|---|---|
| 1. | | |
| 2. | | |
| 3. | | |
| 4. | | |
| 5. | | |

In the above-entitled case the following decision has been rendered or decree issued:

In testimony whereof I have affixed my hand this 9th day of October, 1924, at Chicago, Ill.

John H. R. Janas
Clerk of said Court.

1163

873

# United States District Court

Southern DISTRICT OF Illinois.

#26

HONORABLE COMMISSIONER OF PATENTS,
Washington, D. C.

Sir:

In compliance with the Act of February 18, 1922 ~~(41~~ 42 Stat. L. 392), you are advised that there was filed on the 8th day of November, 1924, in this court an action, suit, or proceeding No. 261, entitled:

Name The Buckeye Incubator Co. and Samuel B. Smith, Plaintiff,

Address Springfield and Cleveland Ohio.

versus

Name Otto Keuhl, Defendant,

Address Minok, Illinois

brought upon the following patents:

| PATENT NO. | DATE OF PATENT | PATENTEE |
|---|---|---|
| 1 1,262,860. | April 16,1918 | |
| 2 | | |
| 3 | | |
| 4 | | |
| 5 | | |

In the above-entitled case, on the _____ day of _____, 192 , the following patents have been included by _____ (insert amendment, answer, cross bill, or other pleading):

| PATENT NO. | DATE OF PATENT | PATENTEE |
|---|---|---|
| 1 | | |
| 2 | | |
| 3 | | |
| 4 | | |
| 5 | | |

In the above-entitled case the following decision has been rendered or decree issued:

Consent Decree, entered Dec. 15, 1924. Injunction, Damages.

In witness whereof I have affixed my hand this 15th day of December, 1924, at Peoria, Illinois.

S. T. Burnett
Clerk of said Court.

1164

874

# United States District Court

DISTRICT OF Illinois.

#27

HONORABLE COMMISSIONER OF PATENTS,
Washington, D. C.

SIR:

In compliance with the Act of February 18, 1922 (42 Stat. L. 392), you are advised that there was filed on the 11th day of February, 1925, in this court an action, suit, or proceeding No. 483 entitled:

Name The Buckeye Incubator Co. and Samuel B. Smith. Plaintiff,

Address Springfield, Ohio.

Name L. V. Rinkenberger Defendant,

Address Gridley, County of McLean, Illinois.

brought upon the following patents:

| | PATENT NO. | DATE OF PATENT | PATENTEE |
|---|---|---|---|
| 1 | 1,262,860. | April 16th, 1918 | Samuel B. Smith, Cleveland, Ohio. |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| 5 | | | |

In the above-entitled case, on the _____ day of _____, 192

the following patents have been included by _____ (insert amendment, answer, cross bill, or other pleading):

| | PATENT NO. | DATE OF PATENT | PATENTEE |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| 5 | | | |

In the above-entitled case the following decision has been rendered or decree issued:

In testimony whereof I have affixed my hand this 11th day of February, 1925, at Springfield, Illinois.

L. J. Bennett
Clerk of said Court.

1165

875

# United States District Court

#28

NORTHERN DISTRICT OF OHIO, WESTERN DIVISION

HONORABLE COMMISSIONER OF PATENTS,
Washington, D. C.

Sir:

In compliance with the Act of February 18, 1922 (42 Stat. L. ), you are advised that there was filed on the 25th day of May, 1925, in this court an action, suit, or proceeding No. 534 Equity, wherein

Name: The Buckeye Incubator Co. Springfield, Ohio. and Samuel B.Smith,
Address: Cleveland, Ohio, Plaintiff,

Name: Otto Vent
Address: [illegible] Tuscarawas County, Ohio. Defendant,

brought upon the following patents:

| PATENT NO. | DATE OF PATENT | PATENTEE |
|---|---|---|
| 1 1,263,[illegible] | April 16,1918 | The Buckeye Incubator Co. |
| 2 | | subject to rights of Samuel B.Smith |
| 3 1,262,860 | April 16, 1918 | The Buckeye Incubator Co. |
| 4 | | subject to rights of Samuel B.Smith |
| 5 | | |

In the above-entitled case, on the _____ day of _____, 192 , the following patents have been included by _____ (insert amendment, answer, cross bill, or other pleading):-

| PATENT NO. | DATE OF PATENT | PATENTEE |
|---|---|---|
| 1 | | |
| 2 | | |
| 3 | | |
| 4 | | |
| 5 | | |

In the above-entitled case the following decision has been rendered or decree issued:

No decision rendered or decree entered

In witness whereof I have affixed my hand this 25th day of May, 1925, at Toledo, Ohio.

S. C. Miller, Clerk,

By [signature] Deputy Clerk of said Court.

1166

876

# United States District Court

Southern District of California

Honorable Commissioner of Patents,
Washington D.C.

Sir:

In compliance with the Act of February 18, 1922 (42 Stat. L. ), you are advised that there was filed on the 22nd day of September, 1926, in this court an action, suit, or proceeding No. I-19-B, entitled:

Name The Buckeye Incubator Co. and Samuel B. Smith, Plaintiff,
Address Springfield, O. Cleveland, O.

versus

Name R. P. Berk and Mrs. E.P.Berk, doing business under the name of Berk's Hi-Grade Hatchery, Defendant,
Address LONG BEACH, Calif.

A brought upon the following patents:

| PATENT NO. | DATE OF PATENT | PATENTEE |
|---|---|---|
| 1. 1,262,860 | Apr.16.1918 | Samuel B. Smith |
| 2. 1,263,138 | Apr.16.1918 | Samuel B. Smith |
| 3. | | |
| 4. | | |
| 5. | | |

In the above-entitled case, on the _____ day of _____, 19__, the following patents have been included by _____ (Court amendment, answer, cross bill, or other pleading):

| PATENT NO. | DATE OF PATENT | PATENTEE |
|---|---|---|
| 1. | | |
| 2. | | |
| 3. | | |
| 4. | | |
| 5. | | |

In the above-entitled case the following decision has been rendered or decree issued:

Consent decree entered Aug. 12, 1935, acknowledging validity of plaintiffs' patents and infringement thereof and granting a perpetual injunction.

In testimony whereof I have affixed my hand this 13th day of August, 1935, at Los Angeles.

CHARLES W. WILLIAMS, Clerk
By Edmund L. Smith, Deputy Clerk.

1167

# United States District Court

Southern DISTRICT OF Ohio

#30

HONORABLE COMMISSIONER OF PATENTS,
Washington, D. C.

Sir:

In compliance with the Act of February 18, 1922 (41 Stat. L. ....), you are advised that there was filed on the 5th day of September, 1925, in this court an action, suit, or proceeding No. 397 In Equity, entitled:

Name The Buckeye Incubator Co, and Samuel B Smith, Plaintiff,
Address Springfield, Ohio (Buckeye Inc, Co) Cleveland, O. (Smith)

versus

Name A. E. Grimes, doing business as Ohio Hatchery, Defendant,
Address Decatur, Brown Co., Ohio.

brought upon the following patents:

| | PATENT NO. | DATE OF PATENT | PATENTEE |
|---|---|---|---|
| 1 | 1,263,138 | April 16,1918 | Samuel B Smith- |
| 2 | | | The Buckeye Incubator Co, Assignee. |
| 3 | 1,262,860 | April 16,1918 | Do. |
| 4 | | | |
| 5 | | | |

In the above-entitled case, on the ..... day of ....., 192 ,

the following patents have been included by ..... (insert amendment, answer, cross bill, or other pleading):

| | PATENT NO. | DATE OF PATENT | PATENTEE |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| 5 | | | |

In the above-entitled case the following decision has been rendered or decree issued:

In witness whereof I have affixed my hand this 5th day of September, 1925, at Cincinnati, Ohio.

B. E. Dilley
Clerk of said Court.

Per T. V. Lamb Deputy

127915
84

878

# United States District Court

DISTRICT OF Ohio

#306(a)

HONORABLE COMMISSIONER OF PATENTS.
Washington, D. C.

SIR:

In compliance with the Act of February 18, 1922 (42 Stat. L. ), you are advised that there was filed on the 5th day of September, 1926, in this court an action, suit, or proceeding No. 397 Eq., entitled:

Name The Buckeye Incubator Co and Samuel B Smith, Plaintiff,

Address Springfield, Ohio & Cleveland, Ohio.

versus

Name A E Grimes, doing business as Ohio Hatchery, Defendant,

Address Decatur, Ohio.

brought upon the following patents:

| | PATENT NO. | DATE OF PATENT | PATENTEE |
|---|---|---|---|
| 1 | 1263138 | April 16th, 1918 | The Buckeye Incubator Co. |
| 2 | 1262860 | April 16th, 1918, | The Buckeye Incubator Co. |
| 3 | | | |
| 4 | | | |
| 5 | | | |

In the above-entitled case, on the day of , 192 , the following patents have been included by (insert amendment, answer, cross bill, or other pleading):

| | PATENT NO. | DATE OF PATENT | PATENTEE |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| 5 | | | |

In the above-entitled case the following decision has been rendered or decree issued:
Final Decree for Complainants, September 13th, 1926,

In witness whereof I have affixed my hand this 13th day of September, 192 6, at Cincinnati, Ohio,

Harry F Rabe,
Clerk of said Court.

By G. V. Lamb Deputy.

1169

829

731

MAIL ROOM MAY 26 1926 PATENT OFFICE

# United States District Court

Eastern DISTRICT OF Tennessee
Northern Division

HONORABLE COMMISSIONER OF PATENTS,
Washington, D. C.

SIR:

In compliance with the Act of February 18, 1922 (42 Stat. L. ), you are advised that there was filed on the 23rd day of June, 1925, in this court an action, suit, or proceeding No. 55-Eq, entitled:

Name The Buckeye Incubator Co. and S.B.Smith, Plaintiff,
Address Springfield, Ohio. Cleveland, Ohio

versus

Name F. E.Hicks and Mrs. F.E.Hicks, Defendant,
Address Fountain City, Knoxville, Tennessee

brought upon the following patents:

| | PATENT NO | DATE OF PATENT | PATENTEE |
|---|---|---|---|
| 1 | 1,262,660 | Apl.16,1918 | S.B.Smith, Assignor The Buckeye Inc |
| 2 | 1,263,135 | Apl.16,1918 | " " " " " |
| 3 | | | |
| 4 | | | |
| 5 | | | |

In the above-entitled case, on the day of 192 , the following patents have been included by (insert amendment, answer, cross bill, or other pleading):

| | PATENT NO | DATE OF PATENT | PATENTEE |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| 5 | | | |

In the above-entitled case the following decision has been rendered or decree issued:

Feb.13,1926; Adjudging letters patent good and valid, enjoining infringement by defts., and perpetual injunction directed to defts, agents, attys and workmen, and adjudging costs against defts.

In witness whereof I have affixed my hand this 24th day of May, 192 6, at Knoxville, Tennessee

Lee A. Beeler, Clerk of said Court.
By [illegible] D.C.

1170

880

Form 101

# United States District Court

*District of* NEW JERSEY

HONORABLE COMMISSIONER OF PATENTS,
Washington, D. C.

Sir:

In compliance with the Act of February 18, 1922 (42 Stat. L. ——), you are advised that there was filed on the 11th day of June, 192 4, in this court an action, suit, or proceeding No. E-278, entitled:

Name The Buckeye Incubator Company & Sam'l B. Smith, Plaintiff,
Address Springfield, Ohio Cleveland, Ohio.

DEFEND

Name Elden E. Cooley, Defendant,
Address Frenchtown, N. J.

brought upon the following patents:

| | PATENT NO. | DATE OF PATENT | PATENTEE |
|---|---|---|---|
| 1 | 1,263,138 | Feb. 12, 1916 | Samuel B. Smith |
| 2 | 1,262,860 | Oct. 26, 1916 | Samuel B. Smith |
| 3 | | | |
| 4 | | | |
| 5 | | | |

In the above-entitled case, on the —— day of ——, 192 , the following patents have been included by —— (insert amendment, answer, cross bill, or other pleading):

| | PATENT NO. | DATE OF PATENT | PATENTEE |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| 5 | | | |

In the above-entitled case the following decision has been rendered or decree issued:

May 6th, 1926 Interlocutory decree after trial

In witness thereof I have affixed my hand this 1st day of June, 1926, at Trenton, N. J.

George T. Granger
Clerk of said Court.

1171

881

# United States District Court

#33

Northern District of Ohio (Eastern Division)

HONORABLE COMMISSIONER OF PATENTS:
Washington, D. C.

SIR:

In compliance with the Act of February 18, 1922 (42 Stat. L. ....), you are advised that there was filed on the 12th day of July, 1926, in this court an action, suit, or proceeding No. 1966, entitled:

Name The Buckeye Incubator Co., et al., Plaintiff,

Address Springfield, Ohio.

versus

Name Joseph A. Blum, d.b.a. Twentieth Century Hatchery, Defendant,

Address New Washington, Ohio.

brought upon the following patents:

| | PATENT NO. | DATE OF PATENT | PATENTEE |
|---|---|---|---|
| 1 | 1,262,660 | April 16, 1918 | The Buckeye Incubator Co. |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| 5 | | | |

In the above-entitled case, on the ..... day of ....., 192 , the following patents have been included by ..... (insert amendment, answer, cross bill, or other pleading):

| | PATENT NO. | DATE OF PATENT | PATENTEE |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| 5 | | | |

In the above-entitled case the following decision has been rendered or decree issued:

.....

.....

In witness whereof I have affixed my hand this 12th day of July, 1926, at Cleveland, Ohio.

R. C. MILLER, Clerk of said Court.

By C. A. Wilson Deputy Clerk.

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88

1172

882

UNITED STATES DISTRICT COURT

#3960

Northern District of Ohio, Eastern Division.

HONORABLE COMMISSIONER OF PATENTS,
Washington, D. C.

SIR:

In compliance with the Act of February 18, 1922 (42 Stat.L. ....), you are advised that there was filed on the 12th day of July 192 6, in this court an action, suit, or proceeding No. 1966 entitled

Name The Buckeye Incubator Co., et al., Plaintiff

Address Springfield, Ohio.

versus

Name Joseph A. Blum, d.b.a. Twentieth Century Hatchery, Defendant

Address New Washington, Ohio.

brought upon the following patents:

| PATENT NO. | DATE OF PATENT. | PATENTEE. |
|---|---|---|
| 1,262,860 | April 16, 1918. | The Buckeye Incubator Co. |

2

In the above-entitled case, on the day of 192 , the following patents have been included by (insert amendment, answer, cross bill, or other pleading):

| PATENT NO. | DATE OF PATENT. | PATENTEE. |
|---|---|---|

In the above-entitled case the following decision has been rendered or decree issued: March 4, 1927. Blum has not infringed patent to Samuel B. Smith No. 1,262,860. Decree to run in favor of The Aero Incubator Co. and its successors. Bill of Complaint dismissed. Defendant to recover of Plaintiffs his costs. D. C. Westenhaver, Judge.

IN WITNESS WHEREOF I have affixed my hand this 4th day of March, 192 7, at Cleveland, Ohio.

89

E. C. Wilson, Clerk of said Court,

By G. L. Patterson, Deputy Clerk.

1173

883

MAIL ROOM JUL 19 1926 PATENT OFFICE

F 34

# United States District Court

Western District of Wisconsin

HONORABLE COMMISSIONER OF PATENTS,
Washington, D. C.

Sir:

In compliance with the Act of February 18, 1922 (42 Stat. L. ....), you are advised that there was filed on the 16th day of July, 1926, 192, in this court an action, suit, or proceeding No. 117, F.Eq, entitled:

Name THE BUCKEYE INCUBATOR CO ET AL, Plaintiff,

Address SPRINGFIELD, OHIO

versus

Name CHARLES P. BRADLEY ET AL, Defendant,

Address PORT ATKINSON, WISCONSIN

brought upon the following patents:

| | PATENT NO. | DATE OF PATENT | PATENTEE |
|---|---|---|---|
| 1. | 1,262,660 | April 16, 1918 | Samuel B. Smith |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| 5. | | | |

In the above-entitled case, on the ..... day of ....., 192, the following patents have been included by ..... (insert amendment, answer, cross bill, or other pleading):

| | PATENT NO. | DATE OF PATENT | PATENTEE |
|---|---|---|---|
| 1. | | | |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| 5. | | | |

In the above-entitled case the following decision has been rendered or decree issued:

.....

.....

.....

In testimony whereof I have affixed my hand this 16th day of July, 1926, 192, at Madison, Wisconsin

H. C. Hale
Clerk of said Court.

884

DEC 13 1926

# United States District Court

#35

EASTERN DISTRICT OF ILLINOIS

HONORABLE COMMISSIONER OF PATENTS,
Washington, D. C.

Sir:

In compliance with the Act of February 18, 1922 (42 Stat. L. ), you are advised that there was filed on the 23rd day of December, 192 , in this court an action, suit, or proceeding No. 2462, entitled:

Name The Buckeye Incubator Company and Samuel B. Smith, Plaintiff,

Address Springfield, Ohio Cleveland, Ohio

DEFENDANT

Name O. B. Ulmer and Dr. Fred Schroeder, Defendant,

Address both at Strasburg, Shelby County, Illinois

F

brought upon the following patents:

| | PATENT NO. | DATE OF PATENT | PATENTEE |
|---|---|---|---|
| 1 | 1,263,138 | April 16, 1918 | Samuel B. Smith, Cleveland, Ohio. |
| 2 | 1,262,860 | April 16, 1918 | Samuel B. Smith, Cleveland, Ohio |
| 3 | | | |
| 4 | | | |
| 5 | | | |

In the above-entitled case, on the 23rd day of December, 192 , entry of appearance of defendants and waiver of service and [illegible] answers of each defendant filed.

| | PATENT NO. | DATE OF PATENT | PATENTEE |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | none | |
| 4 | | | |
| 5 | | | |

In the above-entitled case the following decision has been rendered or decree issued:

Final Decree of Court entered on December 23rd, 1926, finding patent rights good and valid to Samuel B. Smith, the Buckeye Incubator Co. being owner of entire right, title and interest in said patents. Plaintiffs to recover profits, &c, and costs of suit from defendants, and perpetual injunction against said dfts. in this behalf.

In witness whereof I have affixed my hand this 27th day of December, 1926, at East St. Louis, Illinois

Marshall E. Sampson
Clerk of said Court.

1175

885

#36

Circuit Appeals

# District Court of the United States

District of 3rd Circuit

HONORABLE COMMISSIONER OF PATENTS,
Washington, D. C.

Sir:

In compliance with the Act of February 18, 1922 (42 Stat. L. 392), you are advised that there was filed on the 19 day of June, 1926, in this court an action, suit, or proceeding No. B510, entitled:

Name Elden E. Cooley, Appellant, Plaintiff,

Address Franklinton, New Jersey.

versus

Name The Buckeye Incubator Co. & Samuel B. Smith, Appellees, Defendant,

Address Springfield Ohio Cleveland Ohio

brought upon the following patents:

| | PATENT NO. | DATE OF PATENT | PATENTEE |
|---|---|---|---|
| 1 | 1,263,185 | April 16 1915 | The Buckeye Incubator Company |
| 2 | 1,262,860 | " " " | " " " " |
| 3 | | | |
| 4 | | | |
| 5 | | | |

In the above-entitled case, on the _____ day of _____, 192 , the following patents have been included by _____ (insert amendment, answer, cross bill, or other pleading):

| | PATENT NO. | DATE OF PATENT | PATENTEE |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| 5 | | | |

In the above-entitled case the following decision has been rendered or decree issued:

Order Affirming but Modifying decree of Lower Court

In witness whereof I have affixed my hand this 10th day of February, 1927, at Philadelphia Pa.,

Clemens Lewis

Clerk of said Court.

#37

JUN 10 192

No. 4797

# United States Circuit Court of Appeals

SIXTH CIRCUIT

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THE BUCKEYE INCUBATOR COMPANY and SAMUEL B. SMITH,
*Plaintiffs-Appellants,*
v.
IRA M. PETERSIME and RAY PETERSIME,
*Defendants-Appellees.*

APPEAL from the District Court of the United States for the Southern District of Ohio, Western Division.

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Decided June 10, 1927.

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Before DENISON, MOORMAN and KNAPPEN, Circuit Judges.

MOORMAN, Circuit Judge: The decree below dismissed a bill for infringement of United States Letters Patent 1,262,850 to Samuel B. Smith, covering a hatching method for eggs and an apparatus for practicing it. The validity of the patent has been sustained in *Buckeye Incubator Co.* v. *Wolfe*, 291 Fed. 283, affirmed (6 C. C. A.) 296 Fed. 680, and in *Buckeye Incubator Co.* v. *Cooley* (3 C. C. A.) —— Fed. ——. The process and the device used by Smith are fully described in the opinion in the Wolfe case. There is no new art in this case which, upon a reconsideration of validity, would control the conclusion reached by the court

in that case. Claims 1, 2 and 3 set out in the margin are involved.* They are method or process claims.

In the advanced stage of incubation, eggs generate and emit heat. They also require more oxygen than eggs in the earlier stages. Proper incubation must take into account the disposition or diffusion of this emitted heat, the carrying off of the carbon dioxide also emitted from the further advanced eggs and the supplying of the additionally needed oxygen to those eggs without undue loss of the requisite moisture and uniformity of temperature. Smith claims that his invention covers any process of applying heated air to eggs at different stages of incubation whereby these essential steps are effected. His apparatus consists of a box divided into three compartments, one of which is known as a corridor, which separates the side compartments in which there are trays of eggs. The heated air is taken in from the top of the corridor and is driven in a defined course by fans traveling at the rate of about 1700 revolutions a minute to the bottom of the corridor, where it is mushroomed against the floor and escapes under the partitions into the compartments on either side and then ascends (first, through the trays of eggs in the more advanced stage of incubation) to the top of the corridor through openings at the top of the partitions,

---

* 1. The method of hatching a plurality of eggs by arranging them at different levels in a closed chamber having restricted openings of sufficient capacity for the escape of foul air without undue loss of moisture and applying a current of heated air, said current being created by means other than variations of temperature and of sufficient velocity to circulate, diffuse and maintain the air throughout the chamber at substantially the same temperature, whereby the air will be vitalized, the moisture conserved and the units of heat will be carried from the eggs in the more advanced stage of incubation to those in a less advanced stage for the purpose specified.

2. The method of hatching a plurality of eggs by arranging them at different levels in a closed chamber having restricted openings of sufficient capacity for the escape of foul air without undue loss of moisture and applying a power driven current of heated air in an adjacent chamber through openings into the egg chamber, said current being of sufficient velocity to circulate, diffuse and maintain the air throughout the egg chamber at substantially the same temperature, whereby the air will be vitalized, the moisture conserved and the units of heat will be carried from the eggs in the more advanced stage of incubation to those in a less advanced stage for the purpose specified.

3. The method of hatching a plurality of eggs by arranging them at different levels in a closed chamber having restricted openings of sufficient capacity for the escape of foul air without undue loss of moisture and applying a vertically directed current of heated air in an adjacent chamber to circulate in said egg chamber through upper and lower openings between said chambers, said current being created by mechanically moving means of such velocity as to diffuse and maintain the air throughout the egg chamber at substantially the same temperature whereby the air will be vitalized, the moisture conserved and the units of heat will be carried from the eggs in the more advanced stage of incubation to those in the less advanced stage for the purpose specified.

part of it passing out of the box through openings over the sides of the compartments. The Petersime device is an open box without partitions, in which there are egg trays of different sizes arranged in a drum. The heated air is taken in at the bottom of the cabinet and rises primarily because it is heated. There are inlets for air at the bottom and outlets at the top. The air in the drum is agitated by a slow-moving stirrer, but there is no defined current created by the agitation that drives the air first upon the eggs in the more advanced stage of incubation, although it is admittedly so mixed that the heat units from those eggs are diffused throughout the entire drum. There is a thorough mixing of the air but no application of defined air currents.

As we have seen, the apparatus of Smith discloses a defined current of air driven first over the warmer eggs. His process claims may nevertheless be sustained upon a broader ground than exemplified in the device if their language justifies such interpretation. Claim 1 calls for the application of "a current of heated air, said current being created by means other than variations of temperature * * * whereby * * * units of heat will be carried from eggs in the more advanced stage of incubation to those in a less advanced stage." Claim 2 calls for a "power driven current of heated air in an adjacent chamber" * * * said current being of sufficient velocity to circulate, etc., whereby * * * the units of heat will be carried from the eggs in the more advanced stage of incubation to those in the less advanced stage. Claim 3 is even more restricted, calling for "a vertically directed current of heated air in an adjacent chamber * * * said current being created by mechanically moving means * * * whereby * * * the units of heat will be carried from the eggs in the more advanced stage of incubation to those in the less advanced stage * * *." It is thus to be seen that all of the claims call for a current of heated air, limited in Claims 2 and 3 to "power driven" and "vertically directed." The question is whether the broader phrase of Claim 1, "applying a current of heated air," includes the agitation of air, not in defined currents, but so that it will produce a diffusion of heat units resulting in uniformity of temperature.

Looking to the language of the claims, as indeed to the device that Smith uses, it would seem that he had in mind a process by which the warm air taken into the corridor would be currently directed so as to strike first the eggs in the more advanced incubation, take to them the additional needed oxygen, and carry the heat units there-

from to other parts of the two compartments, thus effecting, in part at least, a uniformity of temperature throughout the egg chambers. This interpretation, we think, is borne out by the specifications. They refer to a "forced circulation of hot air," to subjecting the eggs to a "column of air," to moving the eggs to a different position "with reference to the forced circulation of hot air," to forcing the air "to pass between the different eggs" which will in effect "act as a cooling medium" for the more advanced eggs, all of which contemplate a defined current of air by which certain eggs may be cooled and given the additionally needed oxygen and others may be warmed by the heat units which the current carries from the more advanced eggs. The file wrapper history of Smith's patent tends to support the same conclusion. This conception of a current of air driven in a definite or predetermined direction is different, we think, from the Petersime process, by which diffusion of heat units and uniformity of temperature is obtained by the slow stirring or agitation of the air in the egg chamber.

Judgment affirmed.

890

Form 760

MAIL ROOM JUN 25 1927 OFFICE

# District Court of the United States

#38

Northern District of Ohio, Western Division.

HONORABLE COMMISSIONER OF PATENTS,
Washington, D. C.

SIR:

In compliance with the Act of February 18, 1922 (42 Stat. L. 392), you are advised that there was filed on the 24th day of June, 1927, in this court an action, suit, or proceeding No. 775 In Equity, entitled:

Name Samuel B. Smith and The Buckeye Incubator Company, Plaintiff

Address Cleveland, Ohio Springfield, Ohio

versus

Name William F. Almendinger and Paul Almendinger, Defendant

Address Prospect, Ohio

brought upon the following patents:

| | PATENT NO. | DATE OF PATENT | PATENTEE |
|---|---|---|---|
| 1 | 1,262,860 | April 16, 1918 | The Buckeye Incubator Company |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| 5 | | | |

In the above-entitled case, on the _____ day of _____, 19__, the following patents have been included by _____ (insert amendment, answer, cross bill, or other pleading):

| | PATENT NO. | DATE OF PATENT | PATENTEE |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| 5 | | | |

In the above-entitled case the following decision has been rendered or decree issued:

No decision rendered or decree issued.

In witness whereof I have affixed my hand this 24th day of June, A.D., 1927, at Toledo, Ohio.

S. C. MILLER, Clerk,

[signature]

Deputy Clerk of said Court
9/27

1181

891

# 39

MAIL ROOM JUN 25 1927 OFFICE

Form 140

# District Court of the United States

Northern *District of* Ohio, Western Division.

HONORABLE COMMISSIONER OF PATENTS,
Washington, D. C.

SIR:

In compliance with the Act of February 18, 1922 (42 Stat. L. 392), you are advised that there was filed on the 24th day of June, 1927, in this court an action, suit, or proceeding No. 776 In Equity, entitled:

Name Samuel B. Smith and The Buckeye Incubator Company, Plaintiffs
Address Cleveland, Ohio. Springfield, Ohio.

*versus*

Name Harry Almendinger, Defendant.
Address Rocky Ridge, Ohio

brought upon the following patents:

| | PATENT NO. | DATE OF PATENT | PATENTEE |
|---|---|---|---|
| 1 | 1,262,869 | April 16, 1918 | The Buckeye Incubator Company |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| 5 | | | |

In the above-entitled case, on the _____ day of _____, 192 , the following patents have been included by _____ (insert amendment, answer, cross bill, or other pleading):

| | PATENT NO. | DATE OF PATENT | PATENTEE |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| 5 | | | |

In the above-entitled case the following decision has been rendered or decree issued:

No decision rendered or decree issued.

In testimony whereof I have affixed my hand this 24th day of June, A. D., 1927, at Toledo, Ohio.

R. C. MILLER, Clerk,

By _____ Deputy *Clerk of said Court.*

1182

892

$7

UNITED STATES DISTRICT COURT

DISTRICT OF MINNESOTA.

Honorable Commissioner of Patents,
Washington, D.C.

Sir:

In compliance with the Act of February 18, 1922 (42 Stat.L. 388), you are advised that there was filed on the 27th day of June, 1927, in this court an action, suit, or proceeding No. 809 Equity, entitled:

NAME Samuel B.Smith and The Buckeye Incubator Company PLAINTIFF,
ADDRESS Cleveland, Ohio, and Springfield, Ohio, respectively.

versus

NAME Richard Portinga and Riner Portinga, trading as All-State Hatchery Company DEFENDANT,
ADDRESS Willmar, Minnesota.

brought upon the following patents:

| | Patent No. | Date of Patent | Patentee |
|---|---|---|---|
| 1. | 1 262 860 | April 16-1918 | Buckeye Incubator Company |
| 2. | | | (Samuel B.Smith, Assignee) |
| 3. | | | |
| 4. | | | |
| 5. | | | |

In the above-entitled case, on the _____ day of _____, 192_, the following patents have been included by _____ (insert amendment, answer, cross-bill, or other pleading):

| | Patent No. | Date of Patent | Patentee |
|---|---|---|---|
| 1. | | | |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| 5. | | | |

In the above-entitled case the following decision has been rendered or decree issued:

IN WITNESS WHEREOF I have affixed my hand this 27th day of June, 192 7, at Minneapolis, in said District

Joel M.Dickey.
Clerk of said Court.
By _____
Deputy Clerk.

1163

ROOM
JUL 15 1927
U.S. PATENT OFFICE

#40 (a)

UNITED STATES DISTRICT COURT

DISTRICT OF MINNESOTA.

Honorable Commissioner of Patents,
Washington, D.C.

Sir:

In compliance with the Act of February 18, 1922 (42 Stat.L. ), you are advised that there was filed on the 27th day of June, 1927, in this court an action, suit, or proceeding No. 800 Equity, entitled:

Samuel B.Smith and The Buckeye Incubator Company PLAINTIFF,
Cleveland, Ohio, and
Springfield, Ohio, respectively.

Versus

Richard Pertings and Elmer Pertings, trading as DEFENDANT,
Mil-State Hatchery Company
Villmar, Minnesota.

brought upon the following patents:

| Patent No. | Date of Patent | Patentee |
|---|---|---|
| 1. 1 [illegible] | April 16-1912 | Buckeye Incubator Company |
| 2. | | (Samuel B.Smith, Assignee) |
| 3. | | |
| 4. | | |
| 5. | | |

In the above-entitled case, on the _____ day of _____, 192__, the following patents have been included by _____ (insert amendment, answer, cross-bill, or other pleading):

| Patent No. | Date of Patent | Patentee |
|---|---|---|
| 1. | | |
| 2. | | |
| 3. | | |
| 4. | | |
| 5. | | |

In the above-entitled case the following decision has been rendered or decree issued:

Final Consent Decree filed and entered in favor of plaintiffs, July 15,1927.

IN WITNESS WHEREOF I have affixed my hand this 15th day of July, 1927, at Minneapolis, in said Districts.

Joel M.Dickey
Clerk of said Court.

[signature] Deputy

884

UNITED STATES DISTRICT COURT
DISTRICT OF MINNESOTA
Fourth Division.

#41

Honorable Commissioner of Patents
Washington, D.C.

Sir:

In compliance with the Act of February 18,1922 (42 Stat.L.388) you are advised that there was filed on the 18 day of July 1927 in this Court an action, suit, or proceeding No 513 Equity entitled:

Name Samuel B.Smith and The Buckeye Incubator Company Plaintiff,

Address Cleveland and Springfield,Ohio, respectively.

versus

Name Herbert A.Schimelpfenig Defendant

Address Chaska, Minnesota

brought upon the following patents:

| Patent No. | Date of Patent | Patentee |
|---|---|---|
| 1 262 860 | April 16,1918 | Buckeye Incubator Co. (Samuel B.Smith, Assignee) |

In the above-entitled case, on the ____ day of _____ 192__ the following patents have been included by _____ (insert amendment, answer, cross bill, or other pleading):

| Patent No. | Date of Patent | Patentee |
|---|---|---|

In the above-entitled case the following decision has been rendered or decree issued:

In Witness Whereof I have affixed my hand this 18th day of July 1927 at Minneapolis, in said District.

Joel B.Dickey, Clerk of said Court.

By _____, Deputy Clerk.

1185

Room

UNITED STATES DISTRICT COURT
DISTRICT OF MINNESOTA
Fourth Division.

#41(a)

Honorable Commissioner of Patents,
Washington, D.C.

Sir:

In compliance with the Act of February 18, 1922 (42 Stat. L. 88) you are advised that there was filed on the 18 day of July 1927 in this Court an action, suit, or proceeding in Equity entitled:

Name Samuel B. Smith and The Buckeye Incubator Company Plaintiff,

Address Cleveland and Springfield, Ohio, respectively

versus

Name Herbert A. Schimelpfenig Defendant

Address Chaska, Minnesota

brought upon the following patents:

| Patent No. | Date of Patent | Patentee |
|---|---|---|
| 1 262 860 | April 16, 1918 | Buckeye Incubator Co. (Samuel B. Smith, Assignee) |

In the above-entitled case, on the 27th day of August 1927 the following patents have been included by Answer (insert amendment, answer, cross bill, or other pleading):

| Patent No. | Date of Patent | Patentee |
|---|---|---|
| 3 019 | March 30, 1843 | Guerin |
| 120 253 | Oct 24, 1871 | Endemann |
| 152 644 | June 30, 1874 | Jones |
| 272 744 | Feb. 20, 1883 | Morgan |
| 240 004 | April 12, 1881 | Bate |
| 286 756 | Oct 16, 1883 | Winkler |
| 297 676 | April 29, 1884 | Conant |
| 320 463 | June 23, 1885 | Cutting |
| 330 457 | Nov. 17, 1885 | Bassini |
| 344 474 | June 29, 1886 | Campbell |
| 559 676 | May 5, 1896 | Christianson |
| 591 870 | Oct. 19, 1887 | Morgan |
| 410 110 | Aug. 27, 1889 | Knowles et al |
| 432 282 | July 15, 1890 | Proctor |
| 535 175 | March 5, 1895 | Schwartz |
| 553 723 | Jan. 28, 1896 | Proctor |
| 11 460 | Dec. 25, 1894 | Re-issue Patent Proctor |
| 691 837 | Jan. 28, 1902 | Bell |
| 709 650 | Sept. 23, 1902 | Scott |
| 725 049 | April 14, 1903 | Hawkins |
| 745 458 | Dec. 1, 1903 | Perkins |
| 828 181 | Aug. 7, 1903 | Boyd |
| 798 697 | Sept. 5, 1905 | Perkins |
| 886 355 | April 28, 1906 | Osborn |
| 891 019 | June 16, 1908 | Verna |
| 916 273 | March 23, 1909 | Coone |
| 916 454 | March 30, 1909 | Koons |
| 949 653 | Feb. 15, 1910 | Klinke |
| 1 075 747 | Oct 14, 1912 | Zimmer |
| 1 100 146 | June 16, 1914 | Olson |
| 1 137 752 | May 4, 1915 | Goldstein |
| 1 160 793 | Nov 16, 1915 | Van Keuren |
| 1 165 956 | Dec 28, 1915 | Frees |
| 1 205 445 | Nov 21, 1916 | Fullington |

MAIL ROOM SEP 8 1927 U.S. PATENT

UNITED STATES DISTRICT COURT
DISTRICT OF MINNESOTA
Fourth Division.

#4178

Honorable Commissioner of Patents,
Washington, D.C.

Sir:

In compliance with the Act of February 18,1922 (42 Stat.L.) you are advised that there was filed on the 7th day of July 1927 in this Court an action, suit, or proceeding in Equity entitled:

Name SAMUEL B.Smith and The Buckeye Incubator Company Plaintiff,

Address Cleveland and Springfield,Ohio, respectively.

versus

Name Herbert A.Schimelpfenig Defendant

Address Chaska, Minnesota

brought upon the following patents:

| Patent No. | Date of Patent | Patentee |
|---|---|---|
| 1 262 860 | April 16,1918 | Buckeye Incubator Co. (Samuel B.Smith, Assignee). |

In the above-entitled case, on the 27th day of August 1927 the following patents have been included by Answer (Insert amendment, answer, cross bill, or other pleading):

| Patent No. | Date of Patent | Patentee |
|---|---|---|

In the above-entitled case the following decision has been rendered or decree issued:

In Witness Whereof I have affixed my hand this 27th day of August 1927 at Minneapolis, in said District.

Thos. D. Dickey, Clerk of said Court.

By [signature] Deputy Clerk.

897

# District Court of the United States

*District of* MARYLAND.

HONORABLE COMMISSIONER OF PATENTS,
Washington, D. C

Sir:

In compliance with the Act of February 18, 1922 (42 Stat. L. 392), you are advised that there was filed on the 11th day of July, 192 7, in this court an action, suit, or proceeding No. 1891 Equity, entitled:

Name Samuel B. Smith and The Buckeye Incubator Company, Cleveland, Ohio - Springfield, Ohio, Plaintiff's
Address

versus

Name Mortimer F. Lee, Defendant,
Address St. Michaels, County of Talbot, State of Maryland.

brought upon the following patents:

| | PATENT NO. | DATE OF PATENT | PATENTEE |
|---|---|---|---|
| 1. | 1,262,860 | April 16, 1918 | The Buckeye Incubator Company. |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| 5. | | | |

In the above-entitled case, on the _____ day of _____, 192 , the following patents have been included by _____ (insert amendment, answer, cross bill, or other pleading):

| | PATENT NO. | DATE OF PATENT | PATENTEE |
|---|---|---|---|
| 1. | | | |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| 5. | | | |

In the above-entitled case the following decision has been rendered or decree issued:

In testimony whereof I have affixed my hand this thirtieth day of July, 1927, at Baltimore, Maryland.

Arthur L. Spamer
Clerk of said Court.

1188

AUG 5 1927 U.S. PATENT

**United States District Court**

DISTRICT OF NEBRASKA

OFFICE OF THE CLERK

#43

Omaha, August 3, 1927

Hon. Commissioner of Patents,
Washington, D.C.

Sir:

You are hereby advised that on this date, proceedings were commenced by Samuel B. Smith (of Cleveland, Ohio) and The Buckeye Incubator Company (principal place of business at Springfield, Ohio) against L.M. Porter and Daniel L. Gruenig, trading as Omadale Hatchery and Poultry Farm, (at R.F.D. No.8 Florence Station, Omaha, Nebraska) Case No. 866 Equity, alleging infringement of U.S. Letters Patent No. 1,262,860 dated April 16, 1918, issued to The Buckeye Incubator Company subject to the rights of said Samuel B. Smith etc.

Respectfully,

R.C. Hoyt, Clerk,

By John Nicholson
chief deputy.

ATTEST: R.C. Hoyt, Clerk
By John Nicholson
chief deputy.

1189

NOV 28 1927 U.S. PATENT

#44

# District Court of the United States

*District of* KANSAS, FIRST DIVISION.

HONORABLE COMMISSIONER OF PATENTS,
Washington, D. C.

Sir:

In compliance with the Act of February 18, 1922 (42 Stat. L. 392), you are advised that there was filed on the 25th day of November 1927, in this court an action, suit, or proceeding No. 914-N, entitled:

Name Samuel B. Smith and The Buckeye Incubator Company, Plaintiff.

Address Cleveland, Ohio Springfield, Ohio

versus

Name John E. Seber, Defendant,

Address Leavenworth, Kansas

brought upon the following patents:

| PATENT NO. | DATE OF PATENT | PATENTEE |
|---|---|---|
| 1 1,262,860 | | |
| 2 | | |
| 3 ow. F. O. M. W | | |
| 4 | | |
| 5 | | |

In the above-entitled case, on the _____ day of _____, 192 , the following patents have been included by _____ (insert amendment, answer, cross bill, or other pleading):

| PATENT NO. | DATE OF PATENT | PATENTEE |
|---|---|---|
| 1 | | |
| 2 | | |
| 3 | | |
| 4 | | |
| 5 | | |

In the above-entitled case the following decision has been rendered or decree issued:

November 25th, 1927 Decree for Perpetual injunction against defendant, John E. Seber, filed and entered of record.

In witness whereof I have affixed my hand this 25th day of November, 192 7, at Topeka, Kansas

[signature]
Clerk of said Court.

900

MAIL ROOM
MAR 31 1928
PATENT OFFICE

#45

Form 700

# District Court of the United States

Southern DISTRICT OF New York

HONORABLE COMMISSIONER OF PATENTS,
Washington, D. C.

Sir:

In compliance with the Act of February 18, 1922 (42 Stat. L. 392), you are advised that there was filed on the 30th day of March, 1928, in this court an action, suit, or proceeding No. Eq 44-399, entitled:

Name Samuel B. Smith and The Buckeye Incubator Co., Plaintiff,
Address Cleveland, O. Springfield, O.

versus

Name Howard E. Van Winkle, Defendant,
Address New York, N.Y.

brought upon the following patents:

| | PATENT NO. | DATE OF PATENT | PATENTEE |
|---|---|---|---|
| 1 | 1262,860 | April 16, 1918 | Buckeye Incubator Co. |
| 2 | 1263,138 | " 16, " | " " " |
| 3 | | | |
| 4 | | | |
| 5 | | | |

In the above-entitled case, on the _____ day of _____, 192 , the following patents have been included by _____ (insert amendment, answer, [illegible] bill, or other pleading):

| | PATENT NO. | DATE OF PATENT | PATENTEE |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| 5 | | | |

In the above-entitled case the following decision has been rendered or decree issued:

IN WITNESS WHEREOF I have affixed my hand this 30th day of March, 1928, at New York, N.Y.

Alex Gilchrist
Clerk of said Court

1191

MAIL ROOM MAR 31 1928 FROM THE PATENT OFFICE

901
F 46

# District Court of the United States

Southern DISTRICT OF New York

HONORABLE COMMISSIONER OF PATENTS,
Washington, D. C.

SIR:

In compliance with the Act of February 18, 1922 (42 Stat. L. 392), you are advised that there was filed on the 30th day of March, 1928, in this court an action, suit, or proceeding No. Eq 44-400, entitled:

Name Samuel B. Smith and The Buckeye Incubator Co., Plaintiff,
Address Cleveland O. - Springfield O.

versus

Name Gerald R. Shew, Defendant,
Address New York N.Y.

brought upon the following patents:

| | PATENT NO. | DATE OF PATENT | PATENTEE |
|---|---|---|---|
| 1 | 1262,860 | April 16 1918 | Buckeye Incubator Co. |
| 2 | 1263,138 | " 16 " | " " " |
| 3 | | | |
| 4 | | | |
| 5 | | | |

In the above-entitled case, on the _____ day of _____, 192 , the following patents have been included by _____ (insert amendment, answer, cross bill, or other pleading):

| | PATENT NO. | DATE OF PATENT | PATENTEE |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| 5 | | | |

In the above-entitled case the following decision has been rendered or decree issued:

IN WITNESS WHEREOF I have affixed my hand this 30th day of March, 1928, at New York N.Y.

Alex Gilchrist Jr.
Clerk of said Court.

1192

902

RECEIVED
APR
6
1928
PATENT OFFICE

#47

# District Court of the United States

Southern DISTRICT OF New York

HONORABLE COMMISSIONER OF PATENTS,
Washington, D. C.

Sir:

In compliance with the Act of February 18, 1922 (42 Stat. L. 392), you are advised that there was filed on the 30th day of March, 1928, in this court an action, suit, or proceeding No. Eq 44-399, entitled:

Name Samuel B. Smith and The Buckeye Incubator Co, Plaintiff,
Address Cleveland, O. - Springfield, O.

Name Howard E. Van Winkle, Defendant
Address New York City

brought upon the following patents:

| | PATENT NO. | DATE OF PATENT | PATENTEE |
|---|---|---|---|
| 1 | 1,262,760 | April 16, 1918 | Buckeye Incubator Co |
| 2 | 1,263,138 | " 16, " | " " |
| 3 | | | |
| 4 | | | |
| 5 | | | |

In the above-entitled case, on the _____ day of _____, 192 , the following patents have been included by _____ (insert amendment, answer, cross bill, or other pleading):

| | PATENT NO. | DATE OF PATENT | PATENTEE |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| 5 | | | |

In the above-entitled case the following decision has been rendered or decree issued:

Mack

Filed April 5, 1928

IN WITNESS WHEREOF I have affixed my hand and the Seal of said Court this 5th day of April, 1928, at New York City, N. Y.

Clerk of said Court.

1193

#48 903

Circuit Ap. rels

# District Court of the United States

District of 3rd Circuit

Honorable Commissioner of Patents,
Washington, D. C.

Sir:

In compliance with the Act of February 18, 1922 (42 Stat. L. 392), you are advised that there was filed on the 10 day of September, 1927, in this court an action, suit, or proceeding No. 3697, entitled:

Name The Buckeye Incubator Co. & Samuel B. Smith, Appellants Plaintiff,
Address Springfield Ohio Cleveland Ohio

versus

Name William F. Huegot, Appellee Defendant,
Address Frenchtown Ohio

brought upon the following patents:

| PATENT NO. | DATE OF PATENT | PATENTEE |
|---|---|---|
| 1 1262860 | April 16, 1918 | The Buckeye Incubator Co. and Samuel B. Smith |
| 2 | | |
| 3 | | |
| 4 | | |
| 5 | | |

In the above-entitled case, on the _____ day of _____, 192 , the following patents have been included by _____ (insert amendment, answer, cross bill, or other pleading):

| PATENT NO. | DATE OF PATENT | PATENTEE |
|---|---|---|
| 1 | | |
| 2 | | |
| 3 | | |
| 4 | | |
| 5 | | |

In the above-entitled case the following decision has been rendered or decree issued:

Order affirming decree of Lower Court.

In witness whereof I have affixed my hand this 16th day of April, 1928, at Philadelphia Pa.

Reinder's Lewis Jr.
Clerk of said Court.

1194

904

MAIL ROOM
APR
6
1928
U.S. PATENT OFFICE

#49

Form 110

# District Court of the United States

Southern District of New York

Honorable Commissioner of Patents,
Washington, D. C.

Sir:

In compliance with the Act of February 18, 1922 (42 Stat. L. 392), you are advised that there was filed on the 30th day of March, 1928, in this court an action, suit, or proceeding No. E 44-400, entitled:

Name Samuel B. Smith and The Buckeye Incubator Co., Plaintiff,

Address Cleveland, O. - Springfield, O.

Name Gerald R. Thew, Defendant,

Address New York, N.Y.

K brought upon the following patents:

| | PATENT NO. | DATE OF PATENT | PATENTEE |
|---|---|---|---|
| 1 | 1262,860 | April 16, 1918 | Buckeye Incubator Co. |
| 2 | 1263,138 | " 16, 1918 | " " " |
| 3 | | | |
| 4 | | | |
| 5 | | | |

In the above-entitled case, on the _____ day of _____, 192 , the following patents have been included by _____ (insert amendment, answer, cross bill, or other pleading):

| | PATENT NO. | DATE OF PATENT | PATENTEE |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| 5 | | | |

In the above-entitled case the following decision has been rendered or decree issued:

Filed April 5, 1928. March 3

IN WITNESS WHEREOF I have affixed my hand this Aff. to recover damages & Costs. 5th day of April, 1928, at New York, N.Y.

Alex J. Schmidt Jr.
Clerk of said Court.

1195

MAIL ROOM U.S. PATENT OFFICE

# United States District Court

*District of* Oregon.

HONORABLE COMMISSIONER OF PATENTS,
Washington, D.C.

Sir:

In compliance with the Act of February 18, 1922 (42 Stat. L. ), you are advised that there was filed on the 18th day of April, 1928, in this court an action, suit, or proceeding No. E-2264, entitled:

Name Samuel B.Smith and The Buckeye Incubator Company, Plaintiff,

Address Cleveland, Ohio

VERSUS

Name Walter E. Wood, Defendant,

Address Sealy, Oregon.

brought upon the following patents:

| PATENT NO. | DATE OF PATENT | PATENTEE |
|---|---|---|
| 1. 1,262,840 | April 16, 1918 | The Buckeye Incubator Company |
| 2. 1,263,138 | " 16, 1918. | The Buckeye Incubator Company. |
| 3. | | |
| 4. | | |
| 5. | | |

In the above-entitled case, on the day of , 193 , the following patents have been included by (insert amendment, answer, cross bill, or other pleading):

| PATENT NO. | DATE OF PATENT | PATENTEE |
|---|---|---|
| 1. | | |
| 2. | | |
| 3. | | |
| 4. | | |
| 5. | | |

In the above-entitled case the following decision has been rendered or decree issued:

In witness whereof I have affixed my hand this 19th day of April, A.D., 1928, at Portland, Oregon.

G. H. Marsh
Clerk of said Court

1198

906

MAIL ROOM APR 1938 U.S. PATENT OFFICE

# United States District Court

District of ____ 1008

HONORABLE COMMISSIONER OF PATENTS,
Washington, D. C.

Sir:

In compliance with the Act of February 18, 1922 (42 Stat. L. ____), you are advised that there was filed on the 20th day of April, 1938, in this court an action, suit, or proceeding No. E- 8966, entitled:-

Name Samuel B. Smith and The Buckeye Incubator Company, Plaintiff,

Address Cleveland, Ohio

versus

Name Harry E. Lonam, Defendant,

Address Salem, Oregon

brought upon the following patents:

| PATENT NO. | DATE OF PATENT | PATENTEE |
|---|---|---|
| 1. 1,262,860 | April 16, 1918 | The Buckeye Incubator Company |
| 2. 1,263,138 | April 16, 1918 | The Buckeye Incubator Company |
| 3. | | |
| 4. | | |
| 5. | | |

In the above-entitled case, on the ____ day of ____, 19__, the following patents have been included by ____ (insert amendment, answer, cross bill, or other pleading):

| PATENT NO. | DATE OF PATENT | PATENTEE |
|---|---|---|
| 1. | | |
| 2. | | |
| 3. | | |
| 4. | | |
| 5. | | |

In the above-entitled case the following decision has been rendered or decree issued:

In testimony whereof I have affixed my hand this 20th day of April, 1938, at Portland, Oregon.

G. H. Marsh
Clerk of said Court.

1197

#52

Circuit of Ct. 00

# District Court of the United States

District of 3rd Circuit

Honorable Commissioner of Patents,
Washington, D. C.

In compliance with the Act of February 18, 1922 (42 Stat. L. 392), you are advised that there was filed on the 10 day of September, 1927, in this court an action, suit, or proceeding No. 3698, entitled:

Name William F. Willpot, Appellant, Plaintiff,

Address Spinnerstown New Jersey

versus

Name The Buckeye Incubator Company and Appellee, Defendant,

Address Springfield Ohio — Cleveland Ohio

brought upon the following patents:

| PATENT NO. | DATE OF PATENT | PATENTEE |
|---|---|---|
| 1,262,860 | April 16, 1918 | The Buckeye Incubator Co & Dennis B. Smith |
| | | |
| | | |
| | | |

In the above-entitled case, on the _____ day of _____, 192 , the following patents have been included by _____ (insert amendment, answer, cross bill, or other pleading):

| PATENT NO. | DATE OF PATENT | PATENTEE |
|---|---|---|
| | | |
| | | |
| | | |
| | | |
| | | |

In the above-entitled case the following decision has been rendered or decree issued:

Order affirming decree of lower Court

In witness whereof I have affixed my hand this 16th day of April, 1928, at Philadelphia Pa

Frederick Trump
Clerk of said Court.

908

# United States District Court

*District of* Oregon

HONORABLE COMMISSIONER OF PATENTS,
Washington, D. C.

Sir:

In compliance with the Act of February 18, 1922 (42 Stat. L. ), you are advised that there was filed on the 18th day of April, 1928, in this court an action, suit, or proceeding No. E 2964, entitled:

Name Samuel B. [illegible] and The Buckeye Incubator Company, Plaintiff,

Address Cleveland, Ohio

VERSUS

Name Walter W. Reed, Defendant,

Address Canby, Oregon

brought upon the following patents:

| PATENT NO. | DATE OF PATENT | PATENTEE |
|---|---|---|
| 1. 1,262,880 | April 16, 1918 | The Buckeye Incubator Company |
| 2. 1,263,138 | April 16, 1918 | The Buckeye Incubator Company |
| 3. | | |
| 4. | | |
| 5. | | |

In the above-entitled case, on the _____ day of _____, 19 , the following patents have been included by _____ (insert amendment, answer, cross bill, or other pleading):

| PATENT NO. | DATE OF PATENT | PATENTEE |
|---|---|---|
| 1. | | |
| 2. | | |
| 3. | | |
| 4. | | |
| 5. | | |

In the above-entitled case the following decision has been rendered or decree issued:

Decree in favor of complainant dated May 28, 1928

In witness whereof I have affixed my hand this 29th day of May, 1928, at Portland, Oregon

G. H. Marsh
Clerk of said Court.

By [signature] Deputy

1199

# United States District Court

#54

District of Oregon

HONORABLE COMMISSIONER OF PATENTS,
Washington, D. C.

Sir:

In compliance with the Act of February 18, 1922 (42 Stat. L. ), you are advised that there was filed on the 20th day of April, 1926, in this court an action, suit, or proceeding No. E 2966, entitled:

Name Samuel B. Smith and The Buckeye Incubator Company, Plaintiff,

Address Cleveland, Ohio

vs.

Name Harry H. Lamm, Defendant,

Address Salem, Oregon

brought upon the following patents:

| PATENT NO. | DATE OF PATENT | PATENTEE |
|---|---|---|
| 1. 1,262,860 | April 16, 1918 | The Buckeye Incubator Company |
| 2. 1,263,138 | April 16, 1918 | The Buckeye Incubator Company |
| 3. | | |
| 4. | | |
| 5. | | |

In the above-entitled case, on the ____ day of ____, 19__, the following patents have been included by ____ (insert amendment, answer, cross bill, or other pleading):

| PATENT NO. | DATE OF PATENT | PATENTEE |
|---|---|---|
| 1. | | |
| 2. | | |
| 3. | | |
| 4. | | |
| 5. | | |

In the above-entitled case the following decision has been rendered or decree issued:

Decree in favor of complainant dated May 28, 1928

IN WITNESS WHEREOF I have affixed my hand this 29th day of May, 1928, at Portland, Oregon.

G. H. Marsh
Clerk of said Court

By F. W. Brooke
Chief Deputy

1200

FILED
JUL 6 1928
ARTHUR B MUSSMAN
CLERK

No. 4951

# UNITED STATES CIRCUIT COURT OF APPEALS

## SIXTH CIRCUIT

THE BUCKEYE INCUBATOR COMPANY and SAMUEL B. SMITH, *Appellants*,

vs.

JOSEPH A. BLUM, *Appellee*.

APPEAL from the District Court for the Northern District of Ohio.

Decided June 30, 1928.

Before DENISON and MOORMAN, Circuit Judges, and ANDERSON, District Judge.

PER CURIAM: The court below held that the defendant there (appellee here) did not infringe the Smith patent, No. 1,262,860, issued April 16, 1918, for an incubator. The patent and its scope were discussed by this court in *Wolff* v. *Buckeye Co.*, 296 Fed. 680, and in *Buckeye Co.* v. *Petersime*, 19 Fed. (2nd) 721. They have been considered in other circuits in the cases mentioned in the note.[1] Further discussion of the main features is not now necessary.

Counsel for appellant frankly concede that there should be an affirmance, unless we are prepared to modify to some extent our holding in the Petersime case. In that opinion some acceptance was given to the theory that there is no infringement unless the circulating air strikes first those eggs which are in the last stages of incubation and are generating the greatest heat. In considering a construction where the main current of air is brought in from outside, and in thinking of only the first

[1] *Cooley* v. *Buckeye*, C. C. A. 3, 17 Fed. (2nd) 453; *Buckeye* v. *Hillpot*, C. C. A. 3, 24 Fed. (2nd) 341.

circuit which this air makes, that thought seems applicable. Counsel now point out, with much force, that in a case where the air does not come in from the outside in large volume, and that in any case during the circuits after the first one, no one point in the circuit gets the air ahead of any other point, in an absolute way. Which point gets it first, depends upon where we consider the circuit to begin. We think we need not consider the effect of this defect in the reasoning,—if it is a defect,—of our former opinion. The result in that case rests also upon the theory that the patent contemplates a distinct, or at least an identifiable, current of air, flowing like a stream in one direction. Upon reconsideration, we are satisfied that this theory is correct. Whether there is such a fairly distinct current, as distinguished from the general agitation employed by the defendant here, and in less degree by the defendant in the Petersime case, is said to be of no practical importance in achieving the successful result. Perhaps so; and yet dependence upon that theory, in order to sustain the patent, is required, both by the proceedings in the Patent Office and by the prior art, including Smith's too-old public use; Smith learned or knew he must differentiate in this respect in order to get his patent.

The decree below is affirmed.

912

MAIL ROOM JAN 1929 PATENT OFFICE

# District Court of the United States

Southern *District of* Illinois.

HONORABLE COMMISSIONER OF PATENTS,
Washington, D. C.

Sir:

In compliance with the Act of February 18, 1922 (42 Stat. L. 392), you are advised that there was filed on the 12th day of August, 1924, in this court an action, suit, or proceeding No. 298, entitled:

Name The Buckeye Incubator Company, and Samuel B Smith, Plaintiffs

Address Springfield, Ohio and Cleveland, Ohio, Respectively.

versus

Name P.& H.Hatchery (Inc.) Farrow & Hirsch Company, David T. Farrow and Abraham Hirsch. Defendant,

Address Peoria, Illinois.

brought upon the following patents:

| | PATENT NO. | DATE OF PATENT | PATENTEE |
|---|---|---|---|
| 1 | 1,262,860 | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| 5 | | | |

In the above-entitled case, on the _____ day of _____, 192 , the following patents have been included by _____ (insert amendment, answer, cross bill, or other pleading):

| | PATENT NO. | DATE OF PATENT | PATENTEE |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| 5 | | | |

In the above-entitled case the following decision has been rendered or decree issued:

Dismissing the case for want of equity at plaintiffs' costs, on January 4, 1929.

In testimony thereof I have affixed my hand this 4th day of January, 1929, at Peoria, Illinois.

_____
Clerk of said Court.

1203

MAIL ROOM APR 22 1929 U.S. PATENT OFFICE

#57

# United States District Court

Western District of Oklahoma.

HONORABLE COMMISSIONER OF PATENTS,
Washington, D. C.

SIR:

In compliance with the Act of February 18, 1922 (42 Stat. L. ____), you are advised that there was filed on the 19th day of April, 1929, in this court an action, suit, or proceeding No. 1038-Equity, entitled:

Name Samuel B. Smith and The Buckeye Incubator Company, Plaintiff,

Address Samuel B. Smith, Cleveland, Ohio, and The Buckeye Incubator Company, Springfield, Ohio.

versus

Name William M. Hobbs, Defendant,

Address Mangum, Oklahoma.

brought upon the following patents:

| PATENT NO. | DATE OF PATENT | PATENTEE |
|---|---|---|
| 1. 1,262,860 | April 16, 1918, | Samuel B. Smith, assignor to the Buckeye Incubator Co. |
| 2. | | |
| 3. | | |
| 4. | | |
| 5. | | |

In the above-entitled case, on the ____ day of ____, 192 , the following patents have been included by ____ (insert amendment, answer, cross bill, or other pleading):

| PATENT NO. | DATE OF PATENT | PATENTEE |
|---|---|---|
| 1. | | |
| 2. | | |
| 3. | | |
| 4. | | |
| 5. | | |

In the above-entitled case the following decision has been rendered or decree issued:
Final Decree filed and entered April 19, 1929, on agreement of parties, holding Plaintiff's Letters Patent No. 1,262,860 valid, and defendant perpetually enjoined from infringing on plaintiffs said Letters Patent & Plaintiff's to recover costs.

In witness whereof I have affixed my hand this 20th day of April, 1929, at Oklahoma City, Oklahoma.

Theodore M. Filson, Clerk.
BY Earl J. Newton
Deputy Clerk of said Court.

1204

914

MAIL ROOM
MAY
8
1929
U.S. PATENT OFFICE

#51

# District Court of the United States

Northern *District of* Ohio. Western Division

HONORABLE COMMISSIONER OF PATENTS,
Washington, D. C.

SIR:

In compliance with the Act of February 18, 1922 (42 Stat. L. 392), you are advised that there was filed on the 4th day of May, 192 9 in this court an action, suit, or proceeding No. 985 Equity, entitled:

Name Samuel B.Smith and The Buckeye Incubator Company, Plaintiff,

Address Cleveland and Springfield, Ohio, respectively

*versus*

Name Joseph F.Bushong, Defendant,

Address Deshler, Ohio.

brought upon the following patents:

| PATENT NO. | DATE OF PATENT | PATENTEE |
|---|---|---|
| 1 1,262860 | April 16, 1918 | The Buckeye Incubator Company |
| 2 | | |
| 3 | | |
| 4 | | |
| 5 | | |

In the above-entitled case, on the _____ day of _____, 192 , the following patents have been included by _____ (insert amendment, answer, cross bill, or other pleading):

| PATENT NO. | DATE OF PATENT | PATENTEE |
|---|---|---|
| 1 | | |
| 2 | | |
| 3 | | |
| 4 | | |
| 5 | | |

In the above-entitled case the following decision has been rendered or decree issued:
Decree by consent of parties, holding patent valid, plfs to recover ~~damages and ordering perpetual injunction.~~ Plaintiffs to recover costs. Matter of damages settled by parties.

In witness whereof I have affixed my hand this Fourth day of May, 192 9, at Toledo, Ohio.

B.C.Miller, Clerk,

By _____ Deputy Clerk.

1205

915

#59.

MAIL ROOM MAY 1929 U.S. PATENT OFFICE

# District Court of the United States

Northern *District of* Ohio. Western Division.

HONORABLE COMMISSIONER OF PATENTS,
Washington, D. C.

Sir:

In compliance with the Act of February 18, 1922 (42 Stat. L. 392), you are advised that there was filed on the 9th. day of May, 1929, in this court an action, suit, or proceeding No. 986 Equity, entitled:

Name Samuel B. Smith and The Buckeye Incubator Company, Plaintiff,

Address Cleveland and Springfield, Ohio, respectively.

*versus*

Name George M. Glaser, Defendant,

Address McComb, Hancock County, Ohio.

brought upon the following patents:

| | PATENT NO. | DATE OF PATENT | PATENTEE |
|---|---|---|---|
| 1 | 1,262,860 | April 16, 1918 | The Buckeye Incubator Company. |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| 5 | | | |

In the above-entitled case, on the _____ day of _____, 192 the following patents have been included by _____ (insert amendment, answer, cross bill, or other pleading):

| | PATENT NO. | DATE OF PATENT | PATENTEE |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| 5 | | | |

In the above-entitled case the following decision has been rendered or decree issued:

Decree by consent of parties, holding patent valid, pfs to recover damages and ordering perpetual injunction. Plaintiffs to recover costs. Matter of damages settled by parties.

In witness whereof I have affixed my hand this Ninth day of May, 1929, at Toledo, Ohio.

B. C. Miller,
By _____ Deputy *Clerk of said Court.*

1206

916

# United States District Court

#60

DISTRICT OF WASHINGTON

MAIL ROOM JUL 1929 U.S. PATENT OFFICE

HONORABLE COMMISSIONER OF PATENTS,
Washington, D. C.

Sir:

In compliance with the Act of February 18, 1922 (42 Stat. L. ), you are advised that there was filed on the 22 day of July, 1929, in this court an action, suit, or proceeding No. E-9338, entitled:

Name SAMUEL B. SMITH and THE BUCKEYE INCUBATOR COMPANY, Plaintiffs

Address Cleveland, Ohio, and Springfield, Ohio, respectively,

PATENTEE

Name K. W. CASEY, E. V. CASEY and I. D. CASEY, Defendants

Address Casey, Walla Walla County, Washington

brought upon the following patents:

| PATENT NO. | DATE OF PATENT | PATENTEE |
|---|---|---|
| 1 1262860 | April 16, 1918 | THE BUCKEYE INCUBATOR COMPANY |
| 2 1263138 | " | " |
| 3 | | |
| 4 | | |
| 5 | | |

In the above-entitled case, on the _____ day of _____, 192 , the following patents have been included by _____ (insert amendment, answer, cross bill, or other pleading):

| PATENT NO. | DATE OF PATENT | PATENTEE |
|---|---|---|
| 1 | | |
| 2 | | |
| 3 | | |
| 4 | | |
| 5 | | |

In the above-entitled case the following decision has been rendered or decree issued:

Final Decree in accordance with equities of respective parties signed and filed July 22, 1929, upon stipulation of counsel for plaintiffs and defendants.

In witness whereof I have affixed my hand this 24th day of July, 1929, at Walla Walla, Washington.

EVA M. HARDIN
Clerk of said Court.

By Dorothy Bumgarner
Deputy

1207

OIL ROOM SEP 9 1929 WASHINGTON

# United States District Court

#61

DISTRICT OF Missouri

HONORABLE COMMISSIONER OF PATENTS,
Washington, D. C.

Sir:

In compliance with the Act of February 18, 1922 (42 Stat. L. ____), you are advised that there was filed on the 17th day of December, 1925, in this court an action, suit, or proceeding No. 885-Equity, entitled:

Name The Buckeye Incubator Company and Samuel B. Smith, Plaintiff,

Address Springfield, Ohio, and Cleveland, Ohio, respectively.

versus

Name The Miller Hatcheries Inc. and K. I. Miller, Defendant,

Address Lancaster, Missouri

brought upon the following patents:

| | PATENT NO. | DATE OF PATENT | PATENTEE |
|---|---|---|---|
| 1 | 1,282,860 | April 16, 1918 | The Buckeye Incubator Co. (Subject to rights of Samuel B. Smith) |
| 2 | 1,263,138 | April 16, 1918 | " " " " " " " |
| 3 | | | |
| 4 | | | |
| 5 | | | |

In the above-entitled case, on the _____ day of _____, 192 , the following patents have been included by _____ (insert amendment, answer, cross bill, or other pleading):

| | PATENT NO. | DATE OF PATENT | PATENTEE |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| 5 | | | |

In the above-entitled case the following decision has been rendered or decree issued:

Opinion on court filed March 6, 1929, sustaining patents, declaring them infringed and awarding an accounting; on counter-claim making finding in Defendant's favor against plaintiff Buckeye Incubator Co., awarding an accounting in favor of plaintiff Smith. Interlocutory decree filed March 22nd.

In witness whereof I have affixed my hand this 6th day of September, 1929, at Hannibal, Missouri

Jas. J. O'Connor,
Clerk of said Court.

By O. N. Collins, Deputy Clerk.

IN THE UNITED STATES DISTRICT COURT FOR THE
NORTHERN DIVISION OF THE EASTERN
JUDICIAL DISTRICT OF MISSOURI.

BUCKEYE INCUBATOR CO., and
SAMUEL B. SMITH,
Plaintiff

vs. No. 285.

MILLER HATCHERIES, Inc.,
and K. E. Miller,
Defendants

MEMORANDUM OF THE COURT.

I.

This is an action for alleged infringement of two patents granted to plaintiff, S. B. Smith, on April 10, 1918. The patents are numbered 1,262,860 and 1,263,138. The patents were granted to Mr. Smith, assignor, to the Buckeye Incubator Company It seems that the applications for the patents has been assigned to the incubator company prior to the issuance of the patents. The first patent, 1,262,860 is said to be a patent on a method of incubating eggs, and on an apparatus for carrying that method into effect. Claims 1, 2, and 3 relate to the method, and claims 4 and 5 relate to the apparatus and incubator. Patent 1,263,138 relates to a method of turning eggs in the process of incubation. The object of the patent is described as being to provide means whereby the eggs can be equally and uniformally turned from one side to the other during the process of incubation

The defenses urged are the invalidity of the patents because lacking in invention, and non-infringement. The answer also contains a counterclaim.

Plaintiff Buckeye Incubator Company is engaged in the manufacture of incubators at Springfield, Ohio. Plaintiff Samuel B. Smith is also engaged in the manufacture of incubators at Cleveland, Ohio. The defendant, K. E. Miller, is engaged in the business of hatching chickens at Lancaster, Missouri, and operates this business under the name of Miller Hatcheries, Inc.

In August, 1923, the defendant notified the plaintiff corporation that he had some suggestion as to the modification and alternation of its incubator which would be valuable to the company in the practical operation of their machine. The plaintiff replied that it would be glad to have his ideas, and suggested to Mr. Miller that he come to Springfield, Ohio, for a conference. The letter to the defendant informed him that the plaintiff corporation would be willing to compensate the defendant for any new suggestions that he might make if the plaintiff corporation adopted them. In response to this letter the defendant went to Springfield and had a conference with the officers of the plaintiff corporation. There the defendant repeated the substance of his letter to the plaintiff corporation and stated that he was willing to reveal his suggestion and would be compelled to rely upon the good faith and promise of the officers of the corporate plaintiff to compensate him if he revealed his ideas about the alteration of the incubator. This was agreed to by the representatives of plaintiff corporation.

Thereupon the defendant suggested that the capacity of the Buckeye Incubator No. 7 could be increased without increasing the size of the machine by adding additional racks for egg

trays. This machine, No. 7, was equipped with nine incubetion trays and three hatching trays. The defendant suggested that the incubation trays be increased from 9 to 15. To add these additional trays lessened the space between each tray and necessitated cutting out a portion of the bottom of the front support for the tilting trays above. There was a dispute in the testimony as to whether the defendant made any suggestion about this latter point. He claims that he did, and that it was impossible to put the trays closer together without making this alteration in the front plate of the racks for the tilting trays. The plaintiff asserted that no suggestion with reference to this point was made by the defendant.

In addition to this suggestion the defendant also recommended that there be only one electrical connection to the three fans that were placed in the incubator. At that time this No. 7 machine had a separate electrical connection for each of the three fans. Another suggestion made by the defendant was that the opening for ventilation in the top of the incubator be enlarged on account of the additional capacity of the machine.

In this same conversation the defendant continued negotiations which had been opened by correspondence, to purchase some incubators, and on this trip he looked at some of their machines with the view of purchasing the same. During these conferences the officers of the plaintiff corporation told the defendant that it would be impossible for them to adopt his suggestion to increase the size of the machine because they had a contract with plaintiff Smith which provided in substance that the Buckeye Company was privileged to manufacture incubators according to the patents of a capacity of not over 12,500 eggs, and that plaintiff Smith had a contract with the Buckeye Company

to manufacture incubators with a capacity of not less than 25,000 eggs, and that between these two figures, 12,500 and 25,000, nobody was authorized to construct incubators according to the specifications of these patents. If the plaintiff corporation adopted defendants' suggestion by adding the additional trays that the No. 7 machine would have a capacity of more than 12,500 and would, therefore, violate the contract with plaintiff Smith.

Further conversation then took place as to whether or not the defendant Miller had the authority on his own initiative to increase the number of trays in his No. 7 incubator, each of the parties stating that the advice of a patent lawyer would be sought.

When the defendant returned to Lancaster, Missouri, he wrote a letter dated September 3, 1923, to the plaintiff corporation in which he offered to buy 12 No. 7 Buckeye incubators at a stated price, provided the plaintiff would take certain incubators then owned by defendant in part payment. This letter contained the following sentence: "If I could not double the capacity of the Buckeye machines, I would not care so much about them." This letter was answered by a telegram dated September 10, 1923, in which the plaintiff corporation informed the defendant that it had entered his order for the twelve incubators

II

We do not regard the defense of invalidity as having been seriously pressed in this case. These patents have been so often before the courts that we feel justified in assuming that the validity of the patent has been fully established. Buckeye v. Cooley, 17 Fed. (2) 453, CCA 3; Buckeye v. Petersime, 19 Fed. (2) 721, CCA 6; Buckeye v. Hillpot, 24 Fed. (2) 342, CCA 3.

The defendant asserts that in view of the fact that his letter of September 3rd was accepted, that the plaintiff corporation has consented for him to increase the capacity of the Buckeye machines, and, therefore, that there can be no infringement.

To determine this question the entire correspondence has been carefully examined. The letter of September 3rd, covered two type-written pages. It contained no only an offer to buy the Buckeye machines at a certain price, but it also contained a proposition for the plaintiff corporation to take over second-hand incubators owned by the defendant under certain terms and conditions. The telegram accepted the proposition contained in this letter. There is a statement in the letter to the effect that the defendant was interested in doubling the capacity of the incubators. But the offer was not conditioned upon his ability to do this. Moreover, the parties by their subsequent conduct indicated that they did not interpret the contract as amounting to a consent to make the alterations because they continued to negotiate in an effort to determine whether or not the defendant had the authority to make changes in the construction of the incubator.

There are in this case two plaintiffs, and even if the plaintiff corporation had consented for the defendant to make these alterations, which we think it did not, it would have been making a concession beyond its authority. The defendant was aware of the contract existing between plaintiff Smith and the plaintiff corporation. This contract precluded the plaintiff corporation from consenting to the alteration of the incubator which would increase its capacity beyond 12,500 eggs.

Regardless of whether the Buckeye Company consented for the defendant to add additional trays to the incubators, there is still a question as to whether or not the mere act of increasing the capacity of the machines constitutes an infringement of the patent. The patent in no way provides for the size of an incubator. The specifications did not designate the capacity or the number of egg trays that may be placed in any unit. A consideration of this subject has convinced that the defendants' authority for making alterations in plaintiffs' patent device must be limited to repairs and such other changes as would be reasonable in adapting the machines to defendants' use. The defendant by altering the interior of the plaintiffs' incubator, by increasing the number of tilting racks, by changing the dimension of the parts, produced a machine which had a greater capacity but embodies every element of the patent. Not only did he make these alterations in machines which he was operating, but he planned to sell this equipment to owners of Buckeye incubators. He did sell one of the fourteen incubators bought in the Fall of 1923, and supplied to the purchaser his additional equipment. This is infringement. See the recent case of The George Close Co. v. Ideal Wrapping Machine Co., et al, in the Circuit Court of Appeals of the 1st Circuit. (Not reported)

THE COUNTERCLAIM

Defendant claims that the plaintiff Buckeye Company is indebted to him for the information furnished and adopted by the Buckeye Company. The evidence disclosed that subsequent to the conference in Springfield, Ohio, in August, 1923, that the plaintiff put on the market a new incubator known in the evidence as Buckeye Incubator No. 34. The evidence shows that this incubator was first

placed on the market about December, 1924, but that it was in course of construction for a year prior thereto. This incubator No. 34, was constructed with the same number of tilting trays and the same number of hatching trays that were contained in machine No. 7, which it displaced. The old incubator stood something more than seven feet from the ground, and to place the egg racks in the incubator, the operator had to reach well above his head. In the new machine the height was about six feet. This decreased height was, according to the testimony, an advantage in that it was easier to place the trays of eggs in the machine and less likelihood of breaking the eggs in the process. It further resulted in a further decided decrease in weight of the incubator and a decrease in material going into the construction of same.

The new incubator also had a single electric connection to the fan instead of the three connections used in the old incubator. These alterations were substantially those which the defendant made known to the plaintiff corporation in 1923. The additional trays which the defendant suggested were not added, but he proposed to add trays by decreasing the distance between the same and this was done in the new machine.

We are disposed to feel that inasmuch as it is undisputed that plaintiff corporation agreed to compensate the defendant if he made suggestions, which they saw fit to adopt, that he should be compensated for his contribution and that the findings should be in defendants' favor on the counterclaim. The plaintiff corporation agreed to compensate him if it used his information; he gave this information in August, 1923, and the next year the plaintiff placed on the market a new incubator, No. 34, and took off of the market their old incubator, No. 7.

This is strongly indicative of the fact that defendant's information was used. Plaintiff corporation contended that this No. 34 machine was in the course of construction in 1923. According to the testimony it was being built at the time of the conference in Springfield, August, 1923. If at that time plaintiff had determined to place the racks closer together, it should have notified the defendant that they had already made this change. The relationship and dealings of the parties at that time demanded that the plaintiff negotiate in the utmost frankness with the defendant. The defendant was not, however, informed that they had already made this alteration in their incubator, nor was he informed that they were going to build a machine with one electrical connection. This further indicates that they acted on defendant's suggestion.

Counsel may tender a decree sustaining the patents, declaring them infringed, and awarding an accounting; and on the counterclaim, a finding in defendant's favor against plaintiff, Buckeye Incubator Co., awarding an accounting, and a finding in favor of plaintiff Smith; and providing for a Special Master to be named to award damages, and to make the accounting; the matter of costs to await the final determination of the cause.

Charles A Davis
U. S. DISTRICT JUDGE.

Filed March 6th 1929

926

MAIL ROOM SEP 1 1929 U.S. PATENT OFFICE

# United States District Court

Southern District of Califor...

HONORABLE COMMISSIONER OF PATENTS,
Washington D. C.

SIR:

In compliance with the Act of February 18, 1922 (42 Stat. L. ...), you are advised that there was filed on the 14th day of August, 192 9, in this court an action, suit, or proceeding No. G-16-H, entitled:

Name Samuel B. Smith and The Buckeye Incubator Company, Plaintiff,
Address of Cleveland, Ohio and Springfield, Ohio, respectively

versus

Name Matie Benedict, Defendant,
Address San Fernando, Calif.

brought upon the following patents:

| | PATENT NO. | DATE OF PATENT | PATENTEE |
|---|---|---|---|
| 1 | 1,262,860 | 4/16/18 | Buckeye Incubator Company, |
| 2 | 1,263,138 | 4/16/18 | Buckeye Incubator Company, |
| 3 | | | |
| 4 | | | |
| 5 | | | |

In the above-entitled case, on the ... day of ..., 192 , the following patents have been included by ... (insert amendment, answer, cross bill, or other pleading):

| | PATENT NO. | DATE OF PATENT | PATENTEE |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| 5 | | | |

In the above-entitled case the following decision has been rendered or decree issued:

In witness whereof I have affixed my hand this 4th day of September, 192 9, at Los Angeles, California.

R. S. Zimmerman,
Clerk of said Court.

Francis E. Crosby
Francis E. Crosby

1217

MAIL ROOM SEP 1929 U.S. PATENT OFFICE

927

#63

UNITED STATES C[illegible]T COURT OF APPEALS,

# United States District Court.

District of: Eighth Circuit.

HONORABLE COMMISSIONER OF PATENTS,
Washington, D. C.

SIR:

In compliance with the Act of February 18, 1922 (42 Stat. L. 392), you are advised that there was filed on the 3rd day of September, 1929, in this court an action, suit, or proceeding No. 3701, entitled:

Name Miller Hatcheries Incorporated, and K. I. Miller, Plaintiff,
Address Lancaster, Missouri, Appellants,

versus

Name Buckeye Incubator Company (of Springfield, Ohio), Defendant,
Address and Samuel B. Smith (of Cleveland, Ohio), Appellees,

brought upon the following patents:

| | PATENT NO. | DATE OF PATENT | PATENTEE |
|---|---|---|---|
| 1 | 1,262,860 | April 16,1918 | Samuel B. Smith |
| 2 | 1,263,138 | April 16,1918 | Samuel B. Smith |
| 3 | | | |
| 4 | | | |
| 5 | | | |

In the above-entitled case, on the ..... day of ....., 19..
the following patents have been included by ..... (insert amendment, answer, cross bill, or other pleading):

| | PATENT NO. | DATE OF PATENT | PATENTEE |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| 5 | | | |

In the above-entitled case the following decision has been rendered or decree issued:

In witness whereof I have affixed my hand this 10th day of September, 1929, at St. Louis, Missouri.

E. E. Wood
Clerk of said Court.

1218

928

#69

MAIL ROOM NOV 19 1929 U.S. PATENT OFFICE

Form 29

# District Court of the United States

Southern DISTRICT OF California

HONORABLE COMMISSIONER OF PATENTS,
Washington, D. C.

Sir:

In compliance with the Act of February 18, 1922 (42 Stat. L. 392), you are advised that there was filed on the 14th day of August 1929, in this court an action, suit, or proceeding No. G 16 H, entitled:

Name Samuel B. Smith and The Buckeye Incubator Company, Plaintiff,
Address of Cleveland, Ohio and Springfield, Ohio, respectively

DEFEND

Name Matie Benedict, Defendant,
Address San Fernando, Calif.

brought upon the following patents:

| | PATENT NO. | DATE OF PATENT | PATENTEE |
|---|---|---|---|
| 1 | 1,262,860 | 4/16/18 | Buckeye Incubator Company |
| 2 | 1,263,138 | 4/16/18 | Buckeye Incubator Company. |
| 3 | | | |
| 4 | | | |
| 5 | | | |

In the above-entitled suit, on the _____ day of _____, 192 ; the following patents have been included by _____ (insert amendment, answer, cross bill, or other pleading):

| | PATENT NO. | DATE OF PATENT | PATENTEE |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| 5 | | | |

In the above-entitled case the following decision has been rendered or decree issued:

On August 14, 1929 Final Decree filed for perpetual injunction favor of the plaintiff

IN WITNESS WHEREOF I have affixed my hand this 16th day of November, 1929, at Los Angeles, California.

R. S. Zimmerman,
Clerk of said Court.

By Francis E. Cross, Deputy.

Francis E. Cross

1219

MAIL ROOM NOV 27 1929 U.S.

929

# United States District Court

#65

Southern District of Calif. ..

HONORABLE COMMISSIONER OF PATENTS,
Washington D. C.

Sir:

In compliance with the Act of February 18, 1922 (42 Stat. L. ....), you are advised that there was filed on the 22nd day of November, 192 9, in this court an action, suit, or proceeding No. Q-69 M., entitled:

Name Samuel B. Smith and The Buckeye Incubator Company, Plaintiff,
Cleveland Ohio Springfield Ohio
Address

DEFENDANT

Name Herbert H. Waxham (doing business as Waxham Hatcheries), Defendant,
Address Van Nuys, Los Angeles County, California

brought upon the following patents:

| PATENT NO. | DATE OF PATENT | PATENTEE |
|---|---|---|
| 1. 1,262,860 | April 16 1918 | The Buckeye Incubator Company. |
| 2. | | |
| 3. | | |
| 4. | | |
| 5. | | |

In the above-entitled case, on the ..... day of ....., 192 , the following patents have been included by ..... (insert amendment, answer, cross bill, or other pleading):

| PATENT NO. | DATE OF PATENT | PATENTEE |
|---|---|---|
| 1. | | |
| 2. | | |
| 3. | | |
| 4. | | |
| 5. | | |

In the above-entitled case the following decision has been rendered or decree issued:

In witness whereof I have affixed my hand this 23rd day of November, 192 9, at Los Angeles, California

R. Sc. Zimmerman
Clerk of said Court.
By Louis J. Somers Dpty

1220

930

MAIL ROOM MAY 13 1930 U.S. PATENT OFFICE

#66

Form 722

# District Court of the United States

WESTERN DISTRICT OF NEW YORK

HONORABLE COMMISSIONER OF PATENTS,
Washington, D. C.

SIR:

In compliance with the Act of February 18, 1922 (42 Stat. L. 392), you are advised that there was filed on the 12th day of May, 1930, in this court an action, suit, or proceeding No. 253, entitled:

Name Samuel B. Smith, Plaintiff,

Address Cleveland, Ohio

versus

Name James Manufacturing Co., Defendant,

Address Elmira, N. Y.

brought upon the following patents:

| PATENT NO. | DATE OF PATENT | PATENTEE |
|---|---|---|
| 1 1,262,860 | Apr. 16, 1918 | Samuel B. Smith, assigned to Buckeye Incubator Co. |
| 2 | | |
| 3 | | |
| 4 | | |
| 5 | | |

In the above-entitled case, on the ____ day of ____, 19__, the following patents have been included by ____ (insert amendment, answer, cross bill, or other pleading):

| PATENT NO. | DATE OF PATENT | PATENTEE |
|---|---|---|
| 1 | | |
| 2 | | |
| 3 | | |
| 4 | | |
| 5 | | |

In the above-entitled case the following decision has been rendered or decree issued:

IN WITNESS WHEREOF I have affixed my hand this 12th day of May, 1930, at Buffalo, N. Y.

Wm. J. Pickering
Clerk of said Court

1221

MAIL ROOM MAY 14 1930 U.S. PATENT OFFICE

931

#67

Form 99

# District Court of the United States

WESTERN DISTRICT OF NEW YORK

HONORABLE COMMISSIONER OF PATENTS,
Washington, D. C.

Sir:

In compliance with the Act of February 18, 1922 (42 Stat. L. 392), you are advised that there was filed on the 13th day of May, 1930, in this court an action, suit, or proceeding No. 254, entitled:

Name Samuel B. Smith, Plaintiff,

Address Cleveland, Ohio

DEFEND

Name Elmira Hatcheries, Inc., Defendant,

Address Elmira, N. Y.

brought upon the following patents:

| PATENT NO. | DATE OF PATENT | PATENTEE |
|---|---|---|
| 1. 1,282,860 | Apr. 16, 1918 | Samuel B. Smith, assigned to Buckeye Incubator Co. |
| 2. | | |
| 3. | | |
| 4. | | |
| 5. | | |

In the above-entitled case, on the ____ day of ____, 192 , the following patents have been included by ____ (insert amendment, answer, cross bill, or other pleading):

| PATENT NO. | DATE OF PATENT | PATENTEE |
|---|---|---|
| 1. | | |
| 2. | | |
| 3. | | |
| 4. | | |
| 5. | | |

In the above-entitled case the following decision has been rendered or decree issued:

IN WITNESS WHEREOF I have affixed my hand this 12th day of May, 1930, at Buffalo, N. Y.

G.

Mary S. Dickson
Clerk of said Court.

1222

932

#61

Form 100

UNITED STATES CIRCUIT COURT OF APPEALS,

~~[illegible]~~

~~[illegible]~~ Eighth Circuit.

HONORABLE COMMISSIONER OF PATENTS
Washington, D. C.

SIR:

In compliance with the Act of February 18, 1922 (42 Stat. L. 392), you are advised that there was filed on the 19th day of May, 1930, ~~[illegible]~~, in this court ~~[illegible]~~ a decision in cause ~~[illegible]~~ No. 8701, entitled:

Name Miller Hatcheries Incorporated, and K. I. Miller, ~~[illegible]~~ Appellants,

Address Lancaster, Missouri.

versus

Name Buckeye Incubator Company (of Springfield, Ohio), and ~~[illegible]~~

Address Samuel B. Smith (of Cleveland, Ohio), Appellees,

C brought upon the following patents:

| | PATENT NO. | DATE OF PATENT | PATENTEE |
|---|---|---|---|
| 1 | 1,262,060 | April 16,1918 | Samuel B. Smith, |
| 2 | 1,262,128 | April 16,1918 | Samuel B. Smith. |
| 3 | | | |
| 4 | | | |
| 5 | | | |

In the above-entitled case, on the _____ day of _____, 19__, the following patents have been included by _____ (insert amendment, answer, cross bill, or other pleading):

| | PATENT NO. | DATE OF PATENT | PATENTEE |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| 5 | | | |

In the above-entitled case the following decision has been rendered or decree issued:

On May 19, 1930. Decree: Decree of U. S. District Court for the Eastern District of Missouri affirmed with costs.

In witness whereof I have affixed my hand this 22nd day of May, 1930, ~~[illegible]~~, at St. Louis, Missouri.

R. E. Koch,
Clerk of said Court,

by Eugene C. Fisher.
Deputy Clerk.

1223

#69

FILED
FEB 13 1931
JOHN W. MENZIES
CLERK

No. 5564

# UNITED STATES CIRCUIT COURT OF APPEALS

## SIXTH CIRCUIT

---

THE BUCKEYE INCUBATOR COMPANY and SAMUEL B. SMITH, *Appellants*,

v.

BERT W. BOLING, *Appellee*.

APPEAL from United States District Court, Southern District of Ohio.

---

Decided February 13, 1931.

---

Before DENISON, MOORMAN and HICKENLOOPER, Circuit Judges.

MOORMAN, Circuit Judge: In 1924 the appellants, Buckeye Incubator Company and Samuel B. Smith, sued the appellee, Boling, in the United States District Court for the District of Indiana for infringement of the Smith patent, No. 1,262,860. The defenses set up in the answer were invalidity and non-infringement. Upon the trial the defense of invalidity was abandoned and the cause submitted to and determined by the court upon the issue of infringement alone. Upon that issue there was a decree dismissing the bill. The decree so rendered was never appealed from. Subsequently Boling manufactured and sold incubators to the Nampa Hatcheries at Boise, Idaho, Mortimer P. Lee at St. Michael, Maryland, and Herbert A. Schimelpfenig in Minnesota. The Nampa Hatcheries also built an incubator of its own which was different in some respects from the incubator which it had purchased from Boling. Thereupon the Buckeye Incubator Company and Smith brought suit in the appropriate district courts against each of the three mentioned customers, alleging in each case that the defendant had made and/or used and was still using an incubator which was an infringement of the Smith patent. The present suit was

brought by Boling to enjoin the further prosecution of those suits on the ground that the defendants therein were his customers and were protected from molestation by such suits by the decree of non-infringement in the Indiana case. Upon the hearing in the court below a decree was entered perpetually enjoining the appellants from the further prosecution of the cases.

It is conceded by the appellants that the Indiana decree protects Boling and his customers against further suits for the use of machines substantially identical with the machine that was held not to infringe by the Indiana court, and further, that the injunction in the present case was rightly issued if the incubators sold by Boling and involved in the three district court cases did not embody substantial changes in the Indiana incubator in the direction of infringement. *Kessler* v. *Eldred*, 206 U. S. 285; *Hart Steel Co.* v. *Railroad Supply Co.*, 244 U. S. 294.

The Smith patent has been the subject of much litigation.[1] We do not regard a discussion of the holdings in the several cases dealing with it essential to a decision of the question here presented. In the brief of counsel for appellants there are set out eight structural differences between the Indiana machine and the later machines of Boling which are said to effect a substantial change in the direction of infringement. We put aside all these changes as unsubstantial, except the space slats in the central corridor of the later constructions. The Indiana device had space slats in the central corridor for less than ¼ of the height of the egg trays. These were apparently designed to protect the eggs from the direct radiation of the pipes. The Namba incubator has slats the full distance of the trays, thus forming, as in Smith, a closed corridor in the center of the incubator box. The Schimelpfenig and Lee incubators seem to have no such slats between the two trays above the fan panel nor any between the bottom tray and the one next to it.

The closed corridor in Smith, operating with other features of the device, was thought by this court in the Petersime case to have the effect of producing a defined current of air. Whether such a current was formed in the Indiana structure or there was merely an agitation of the air are questions that were not necessarily determinded in the Indiana case, for there was the further dif-

[1] *Buckeye Incubator Co.* v. *Wolf*, 291 Fed. 253 (D.C.); *Wolf* v. *Buckeye Incubator Co.*, 296 Fed. (6) 680; *Buckeye Incubator Co.* v. *Cooley* (3 C. C. A.), 17 Fed. (2d) 453; *Buckeye Incubator Co.* v. *Blum*, 17 Fed. (2d) 456 (D.C.); *Buckeye Incubator Co.* v. *Petersime* (6 C. C. A.), 19 Fed. (2d) 721; *Buckeye Incubator Co.* v. *Hillpot* (3 C. C. A.), 24 Fed. (2d) 341; and *Buckeye Incubator Co.* v. *Blum* (6 C. C. A.), 27 Fed. (2d) 333.

ference between the two methods there involved, that in Smith the warmed current of fresh air first contacted with the eggs in the more advanced stage of incubation, whereas in the Indiana structure, if there was such a current, it contacted first with the eggs less advanced in incubation.

This latter difference, as well as the difference in the direction of the current, if there was a current in the Indiana device, are quite obviously embodied in the later Boling devices. There has been, however, such a change in the corridor of these later devices as might well be thought to assist in forming a defined current or cycle that did not exist under the Indiana method. Such change is necessarily in the direction of infringement upon one possible basis of the decision by the Indiana court. Whether infringement is avoided in the present devices by the lack of a *sufficiently well-defined* current or cycle of air, or by the direction in which the air is propelled, or by the fact that the heated air first contacts the eggs in the less advanced stages of incubation, we expressly refrain from deciding. Those are questions to be determined by the courts in which the cases are pending. It is sufficient for the purposes of this case that there has been a change in the direction of infringement upon a possible basis of the Indiana decision. This avoids the doctrine of *Kessler* v. *Eldred, supra*.

The decree is reversed and the cause remanded for a dismissal of the bill.

936

MAIL ROOM JUL 30 1931 U.S. PATENT OFFICE

# United States District Court

District of Minnesota, Second Division

HONORABLE COMMISSIONER OF PATENTS,
Washington, D. C.

SIR:

In compliance with the Act of February 18, 1922 (42 Stat. L. ____), you are advised that there was filed on the 27th day of July, 1931, in this court an action, suit, or proceeding No. 295 Equity, entitled:

Name Samuel R. Smith, Plaintiff,

Address Cleveland, Ohio

DEFENDANT

Name E. H. Snow and E. H. Snow d. b. a. Snow's Hatcheries and Snow's Incubator Company, Defendant,

Address Sleepy Eye, Minnesota

brought upon the following patents:

| | PATENT NO. | DATE OF PATENT | PATENTEE |
|---|---|---|---|
| 1 | 1,262,860 | April 16, 1918 | The Buckeye Incubator Company |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| 5 | | | |

In the above-entitled case, on the ____ day of ____, 193 , the following patents have been included by ____ (insert amendment, answer, cross bill, or other pleading):

| | PATENT NO. | DATE OF PATENT | PATENTEE |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| 5 | | | |

In the above-entitled case the following decision has been rendered or decree issued:

In testimony thereof I have affixed my hand this 27th day of July, 1931, at Mankato, Minn.

JOEL N. DICKEY
Clerk of said Court.
BY Belle Aldrich, Deputy Clerk.

1227

GROUP A.

PRIOR PATENTS CITED ON THE FILE WRAPPER RECORD OF THE SMITH PATENT IN SUIT, 1,262,860, OF APRIL 16,1918.

| Patent No. | Date of Patent | Patentee |
|---|---|---|
| U.S.No. 120,353 | Oct. 24, 1871 | H. Endemann |
| U.S.No. 152,644 | June 30, 1874. | E. A. Jones and C.W.Jones |
| U.S.No. 272,744 | Feb. 20, 1883 | A. H. Morgan |
| U.S.No. 286,726 | Oct. 16, 1883 | C. F. Winkler |
| U.S.No. 298,678 | Apr. 29, 1884 | G. Conant, |
| U.S.No. 330,457 | Nov. 17,1885 | C. Bassini, et al |
| U.S.No. 344,474 | June 29, 1886 | J. W. Campbell |
| U.S.No. 359,676 | May 5, 1886 | T.R.C. Christianson |
| U.S.No. 591,870 | Oct. 19, 1897 | F. H. Morgan |
| U.S.No. 691,837 | Jan. 28, 1902 | V. S. Bell |
| U.S.No. 709,860 | Sept.23, 1902 | C. F. Scott, |
| U.S.No. 745,458 | Dec. 1, 1903 | F. C. Perkins |
| U.S.No.828,181 | Aug. 7, 1906 | G. H. Boyd |
| U.S.No. 891,019 | June 16, 1908 | L. Verna |
| U.S.No. 916,454 | Mar. 30, 1909 | V. C. Koons, |
| U.S.No. 949,653 | Feb. 15, 1910 | J. H. Klinke |
| U.S.No.1,100,146 | June 16,1914 | J. C. Olson |
| U.S.No.1,137,752 | May 4, 1915 | G. E. Goldstein |
| U.S.No.1,160,793 | Nov. 16, 1915 | S. S. Van Keuren |
| German Pat.No.156,917 | Nov. 7, 1901 | E. Stulik |

GROUP B.

PRIOR PATENTS, NONE OF WHICH WERE CITED ON THE FILE WRAPPER RECORD OF THE SMITH PATENT IN SUIT, 1,262,860, OF APRIL 16,1918

| Patent No. | Date of Patent | Patentee |
|---|---|---|
| U.S.No. 3,019 | Mar. 30, 1843 | M. K. Guerin |
| U.S.No. 193,616 | July 31, 1877 | E. S. Renwick |
| U.S.No. 217,148. | July 1, 1879 | E. S. Renwick |
| U.S.No. 224,224 | Feb. 3, 1880 | E. S. Renwick |
| U.S.No. 271,184 | Jan. 23, 1883 | H. Altenbrand |
| U.S.No. 280,490 | July 3, 1883 | O. Knapp |
| U.S.No. 335,961 | Feb. 9, 1886 | E.S. Renwick |
| U.S.No. 340,483 | June 23, 1886 | Lewis Cutting |
| U.S.No. 436,321 | Apr. 22, 1890 | J. K. Proctor & J. H. Knowles |
| U.S.No. 456,407 | July 21, 1891 | F.Frey & A.M. Wayne |
| U.S.No. 535,175 | Mar. 5, 1895 | C.W. Schmartz |
| U.S.No. 553,723 | Jan. 28, 1896 | J. K. Proctor |
| U.S.No. 566,068 | July 6, 1897 | W. P. Jones |
| U.S.No. 589,145 | Feb. 15,1898 | George Eutz |
| U.S.No. 614,493 | Nov. 22, 1898 | C.S. Newson |
| U.S.No. 789,719 | May 16, 1905 | J. M. Day |
| U.S.No. 798,697 | Sept. 5, 1905 | F.C. Perkins |
| U.S.No. 832,151 | Oct. 2, 1906 | C.S. Newson |
| U.S.No. 992,622 | May 16,1911 | J. Wiebe |
| U.S.No.1,010,809 | Dec. 5, 1911 | J. Schmidt & H.Schutterle |
| U.S.No.1,034,205 | July 30, 1912 | J.C. Cogburn |
| U.S.No.1,075,747 | Oct. 14, 1913 | C.W. Kimmer |
| U.S.No.1,086,903 | Feb. 10, 1914 | A.Di Domenico & A. Amicarelli |
| U.S.No.1,158,447 | Nov. 2, 1915 | C. J. Coleman |
| U.S.No.1,195,705 | Aug. 22, 1916 | P. S. Martin |
| U.S.No. 360,223 | Mar. 29, 1887 | E. H. Johnson |
| U.S.No. 843,209 | Feb. 12, 1907 | F.H.Peters & H.H.Hungerford |
| U.S.No. 917,483 | Apr. 6, 1909 | C.C. Peck |
| U.S.No. 948,911 | Jan. 18, 1910 | C.C. Andrews |

UNITED STATES DISTRICT COURT

DISTRICT OF MINNESOTA

FOURTH DIVISION (Transferred from Second Division)

Honorable Commissioner of Patents,
Washington, D.C.

Sir:

In compliance with the Act of February 18, 1922 (42 Stat.L.__), you are advised that there was filed on the 4th day of December, 1924, in this court an action, suit, or proceeding No. 295 Eq entitled:

Name Samuel B.Smith, Plaintiff

Address Cleveland, Ohio

Versus

Name E.H.Snow and E.W.Snow, d.b.a. Snow's Hatcheries and Snow's Incubator Company, Defendant

Address Sleepy Eye, Minn.

brought upon the following patents:

| Patent No. | Date of Patent | Patentee |
|---|---|---|
| 1 282 580 | April 15 - 1918 | The Buckeye Incubator Company (Samuel B.Smith, Assignee) |
| | | |
| | | |
| | | |

(Fourth Division No 2119 Equity)

In the above-entitled case, on the 2nd day of November, 1925 the following patents have been included by Answer (insert amendment, answer, cross bill, or other pleading):

| Patent No. | Date of Patent | Patentee |
|---|---|---|
| | | |
| | | |
| | | |
| | | |
| | | |

In the abovecentitled case the following decision has been rendered or decree issued:

IN WITNESS WHEREOF I have affixed my hand this 2nd day of November, 1925, at Minneapolis, in said District

Joel M.Dickey
Clerk of said Court

By [signature] Deputy Clerk.

1229

RECEIVED DEC 24 1931 U.S. PATENT OFFICE

# United States District Court

#72.

Southern District of Ohio

HONORABLE COMMISSIONER OF PATENTS,
Washington, D. C.

Sir:

In compliance with the Act of February 18, 1922 (42 Stat. L. ____), you are advised that there was filed on the 14th day of December, 1931, in this court an action, suit, or proceeding No. 920, entitled:

Name Samuel B. Smith, Plaintiff,

Address Cleveland, Ohio

versus

Name Edmund Kathe, Defendant,

Address Chillicothe, Ohio,

brought upon the following patents:

| PATENT NO. | DATE OF PATENT | PATENTEE |
|---|---|---|
| 1,262,860 | Apl. 16, 1918 | The Buckeye Incubator Company. |
| | | |
| | | |
| | | |
| | | |

In the above-entitled case, on the ____ day of ____, 19__, the following patents have been included by ____ (insert amendment, answer, cross bill, or other pleading):

| PATENT NO. | DATE OF PATENT | PATENTEE |
|---|---|---|
| | | |
| | | |
| | | |
| | | |
| | | |

In the above-entitled case the following decision has been rendered or decree issued: Dec. 14, 1931, a decree of infringement and awarding injunction.

In witness whereof I have affixed my hand this 21st day of December, 1931, at Columbus, Ohio.

A. F. Rankel
Clerk of said Court

1230

940

NOTICE ON FILING OF PATENT CASE

#73

# District Court of the United States

NORTHERN DISTRICT OF OHIO

EASTERN DIVISION

MAIL ROOM
OCT 20 1921
U.S. PATENT OFFICE

*Honorable Commissioner of Patents, Washington, D. C.*

Sir:

In compliance with the Act of February 18, 1922 (41 Stat. L. ), you are advised that there was filed on the 9th day of October, 192 , in this court an action, suit, or proceeding, No. 4023, entitled—

Name Samuel B. Smith, Plaintiff

Address 48 Collyer Road, Cleveland, Ohio

| | (an Ohio Corporation) | (a Delaware Corporation) | (An Ohio Corporation) |
|---|---|---|---|
| Name | The Buckeye Incubator Co., | The Buckeye Incubator Co., | The Buckeye Incubator Mfg. Co. |
| Address | Cleveland, Ohio. | Beechwood, Ohio. | Cleveland, Ohio |

Defendant

brought upon the following patents:

| PATENT NO. | DATE OF PATENT | PATENTEE |
|---|---|---|
| 1,268,860 | April 18, 1918 | Samuel B. Smith |
| 1,263,138 | April 8, 1918 | Samuel B. Smith |

In the above-entitled case, on the _____ day of _____, 192 , the following patents have been included by _____ _____ (Amended complaint, answer, cross bill, or other pleading)

| PATENT NO. | DATE OF PATENT | PATENTEE |
|---|---|---|

In the above-entitled case the following decision has been rendered or decree issued:

IN WITNESS WHEREOF, I have affixed my hand this 9th day of October, 1921, at Cleveland, Ohio.

F. J. HECKLER, Clerk.

By O. M. Adams, Deputy Clerk

1231

MAIL ROOM
JUN 13 1932
U.S. PATENT OFFICE

#79

UNITED STATES DISTRICT COURT
DISTRICT OF MINNESOTA
Fourth Division.

Honorable Commissioner of Patents,
Washington, D.C.

Sir:

In compliance with the Act of February 18, 1922 (42 Stat. L. 388) you are advised that there was filed on the 18th day of July 1927 in this Court an action, suit, or proceeding [illegible] Equity entitled:

Name Samuel B. Smith and The Buckeye Incubator Company Plaintiff,

Address Cleveland and Springfield, Ohio, respectively

versus

Name Herbert A. Schimelpfenig Defendant

Address Chaska, Minnesota

brought upon the following patents:

| Patent No. | Date of Patent | Patentee |
|---|---|---|
| 1 262 860 | April 16, 1918 | Buckeye Incubator Co. (Samuel B. Smith, Assignee) |

In the above-entitled case, on the 27th day of August 1927 the following patents have been included by Answer (insert amendment, answer, cross bill, or other pleading):

| Patent No. | Date of Patent | Patentee |
|---|---|---|

(See list attached to last report)

In the above-entitled case the following decision has been rendered or decree issued:

Consent decree for plaintiffs entered June 4, 1932, holding patent good and valid as to claims and providing for permanent injunction without accounting and without costs.

In Witness Whereof I have affixed my hand this 10th day of June 1932 at Minneapolis, in said District.

Joel M Dickey, Clerk of said Court,
By [signature] Deputy Clerk.

1232

MAIL ROOM
JUL 11 1932
U.S. PATENT OFFICE

# United States District Court

Western District of Wisconsin

HONORABLE COMMISSIONER OF PATENTS,
Washington, D. C.

SIR:

In compliance with the Act of February 18, 1922 (41 Stat. L. ____), you are advised that there was filed on the 9th day of July, 1932, 192 , in this court an action, suit, or proceeding No. 2109, Equity, entitled:

Name Samuel B. Smith, Plaintiff,

Address Cleveland, Ohio,

versus

Name Raymond Clark, Harvey Clark and Mabel Clark, Administratrix of the Estate of James Newman Clark, deceased, Defendant,

Address Meridean, Wisconsin

brought upon the following patents:

| | PATENT NO. | DATE OF PATENT | PATENTEE |
|---|---|---|---|
| 1 | 1,262,860 | Oct 26, 1916 | Samuel B. Smith |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| 5 | | | |

In the above-entitled case, on the ____ day of ____, 192 , the following patents have been included by ____ (insert amendment, answer, cross bill, or other pleading):

| | PATENT NO. | DATE OF PATENT | PATENTEE |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| 5 | | | |

In the above-entitled case the following decision has been rendered or decree issued:

In witness whereof I have affixed my hand this 9th day of July, 1932, 192 , at Madison, Wisconsin,

H. C. Hale, Clerk,
Clerk of said Court

By Fred W. Dorwick

1233

S. B. SMITH.

INCUBATOR.

APPLICATION FILED OCT. 26, 1916.

1,262,660. Patented Apr. 16, 1

2 SHEETS—SHEET 1.

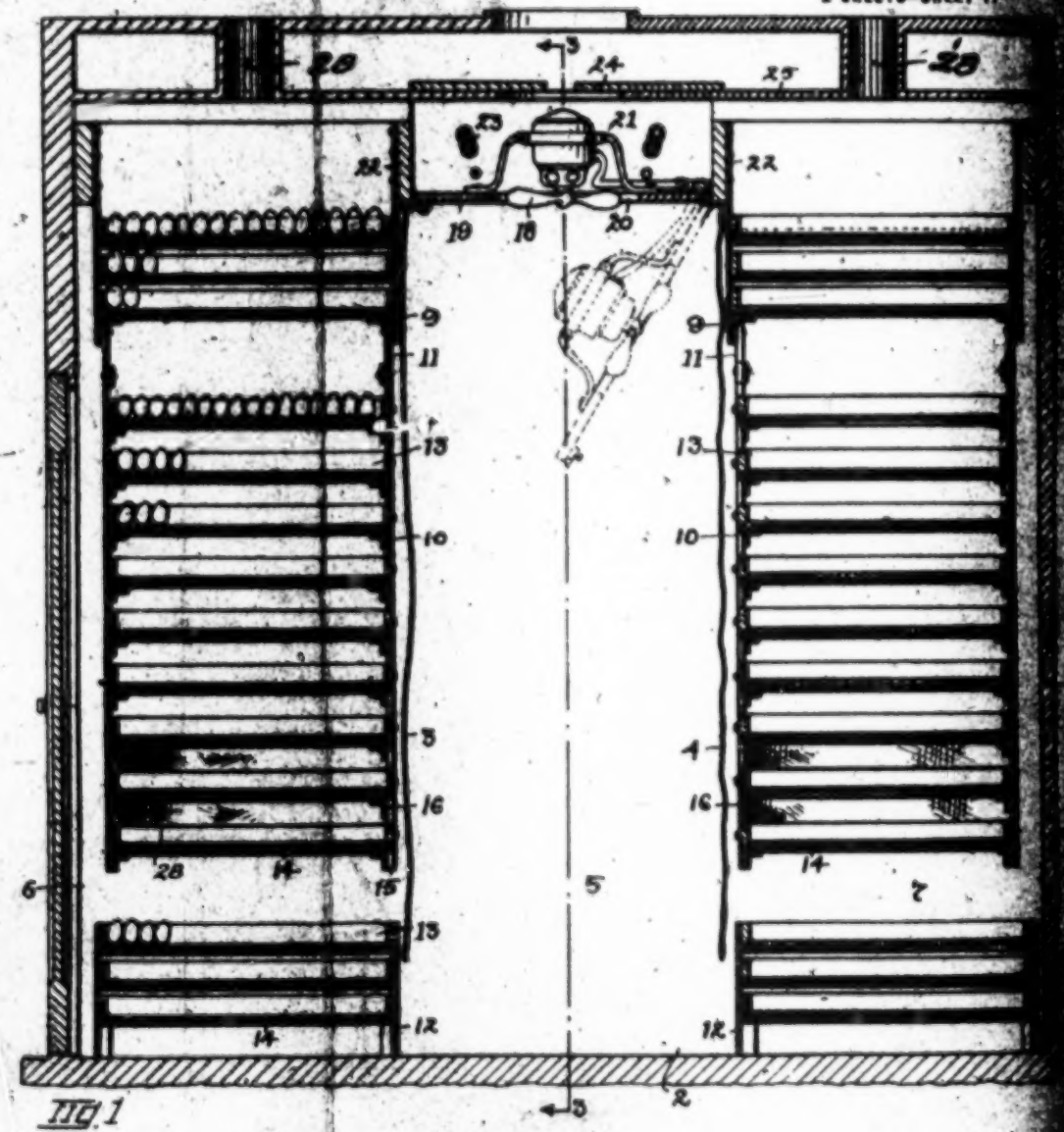


Fig. 1

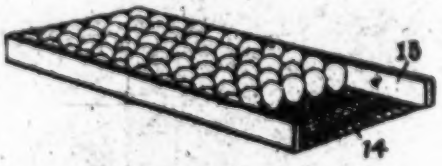


Fig. 2

INVENTOR.
S. B. SMITH.
BY Staley & Bowman
ATTORNEYS

944

S. B. SMITH.

INCUBATOR.

APPLICATION FILED OCT. 26, 1916.

1,262,860.

Patented Apr. 16, 1918.

2 SHEETS—SHEET 2.

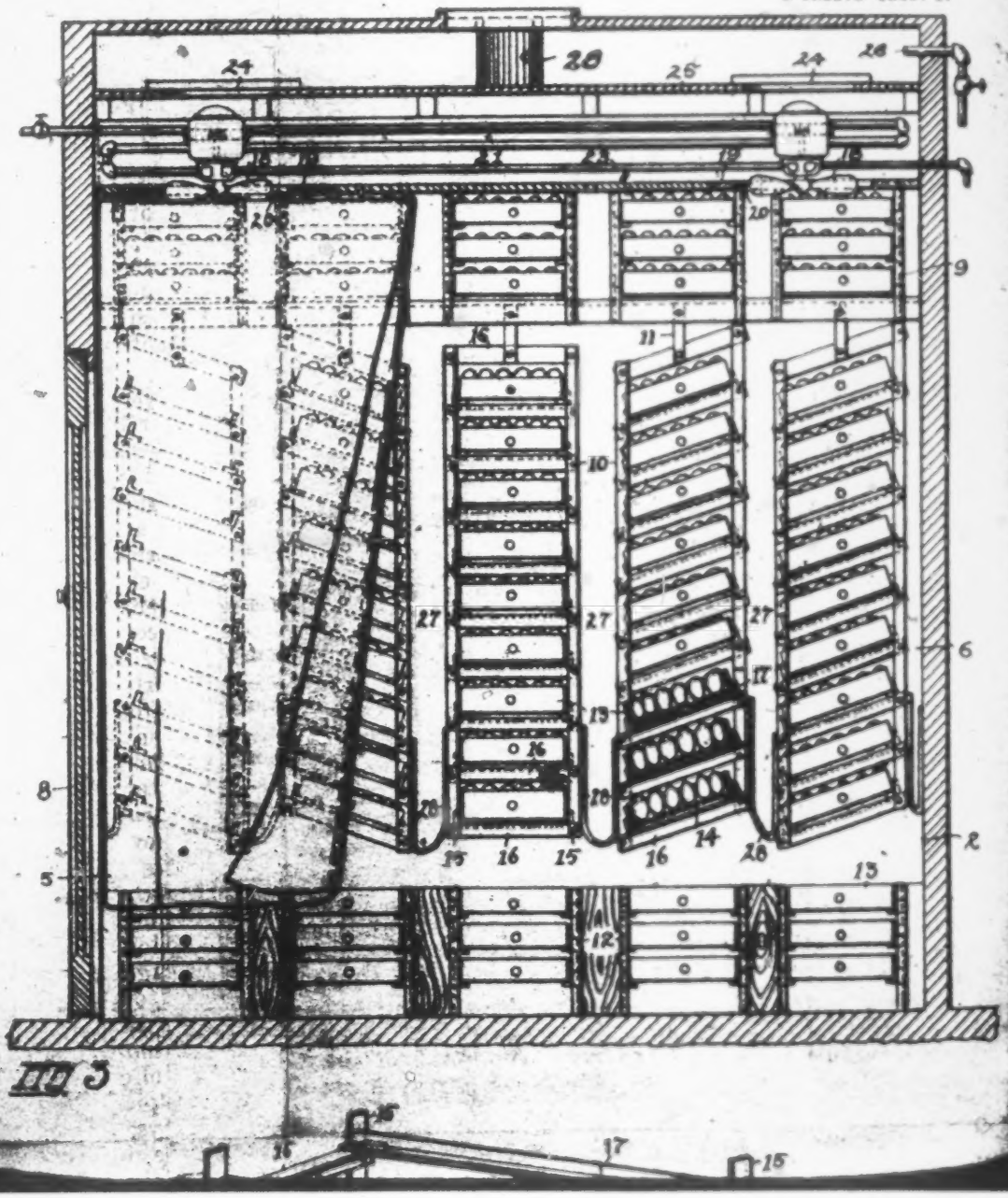


FIG 3

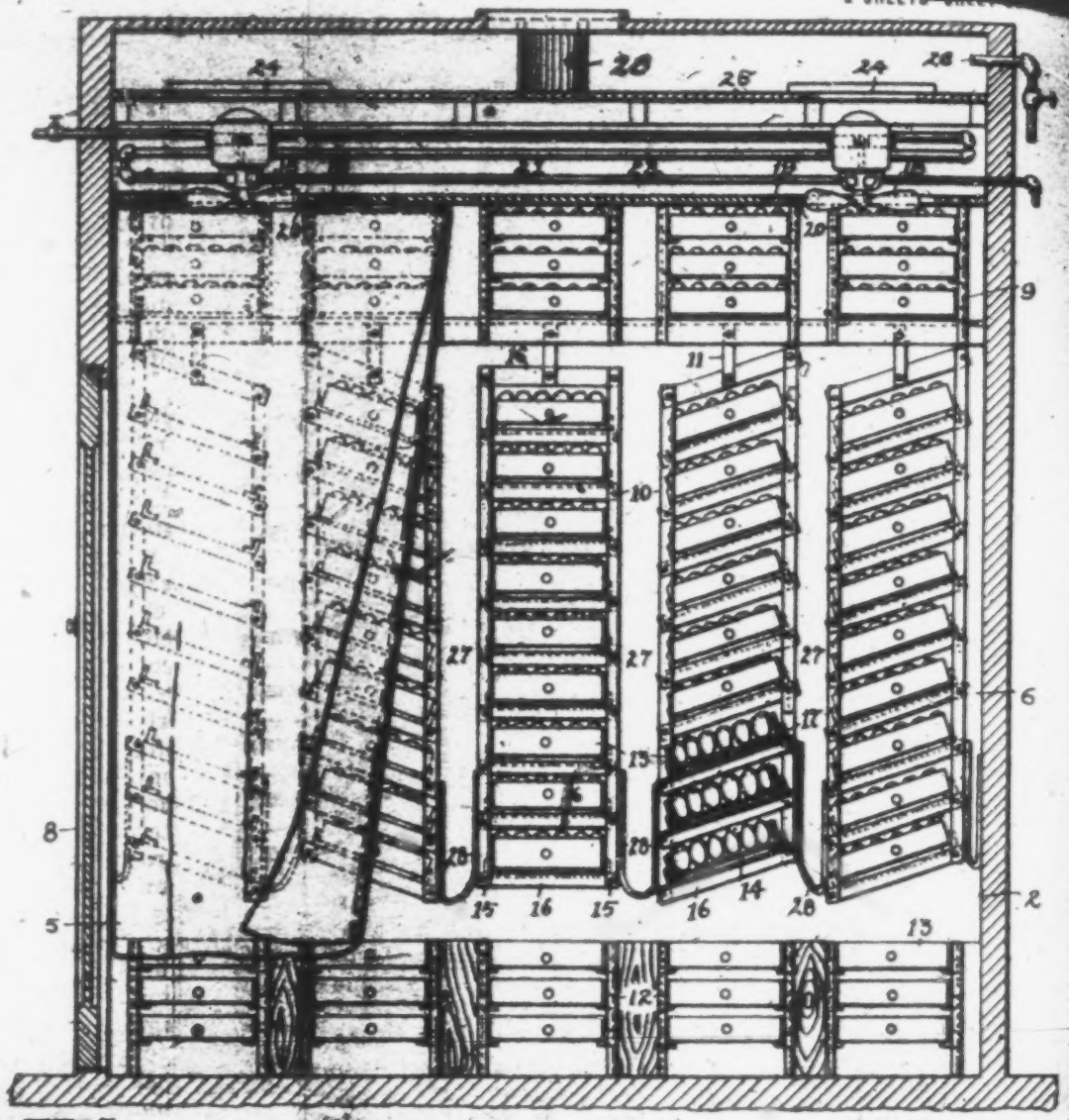


FIG 3.

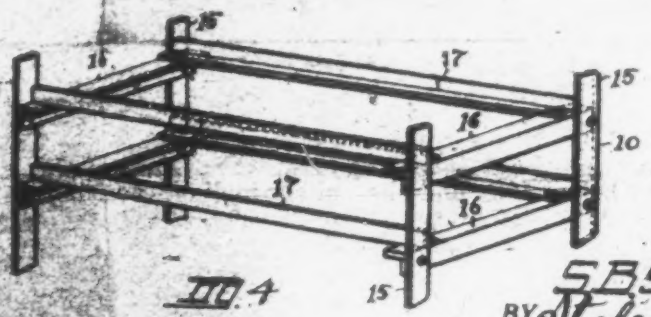


FIG 4.

INVENTOR.
S. B. SMITH.
BY Staley & Bowman
ATTORNEYS.

# UNITED STATES PATENT OFFICE.

SAMUEL B. SMITH, OF CLEVELAND, OHIO, ASSIGNOR TO THE BUCKEYE INCUBATOR CO., OF SPRINGFIELD, OHIO, A CORPORATION OF OHIO.

## INCUBATOR.

1,262,860. Specification of Letters Patent. Patented Apr. 16, 1918.

Application filed October 26, 1916. Serial No. 127,218.

*To all whom it may concern:*

Be it known that I, SAMUEL B. SMITH, a citizen of the United States, residing at Cleveland, in the county of Cuyahoga and State of Ohio, have invented certain new and useful Improvements in Incubators, of which the following is a specification.

The improved apparatus and method, is particularly designed for extensive operations wherein a chamber of large dimensions is adapted to contain thousands of eggs in separate trays arranged in tiers and the method of heating is such that the heated air is adapted to the eggs in various stages of incubation. There is a forced circulation of hot air through the chamber which is adapted preferably to maintain all eggs at temperatures between 100° and 105° Fahrenheit approximately and this improved system contemplates that fresh eggs will be placed in a horizontal plane, preferably by means of trays supported in horizontal planes, and after the eggs have been subject to the circulation of hot air for a predetermined time (the air circulating largely around the eggs) they will be placed in a tilted or inclined position in a different location but still subject to the same column of air and at this period of incubation they will be tilted in different planes at regular intervals during the time they remain in this latter position, and after they have remained for a predetermined time they will be again moved to a different position with reference to the [illegible] circulation of hot air and so placed [illegible] that the air will tend to keep the [illegible] 105° temperature, and in this last [illegible] position the air will be forced to pass [illegible] the different eggs and will in effect [illegible] a cooling medium for the eggs. The [illegible]re of circulating air should be such [illegible] in the early stage of

In the accompanying drawings:

Figure 1 is a cross section of my improved incubator.

Fig. 2 is a perspective view of one of the egg trays with one end removed to more clearly disclose the open mesh bottom.

Fig. 3 is a vertical section of the incubator on line 3—3, Fig. 1.

Fig. 4 is a perspective view of a portion of one of the tilting racks for the trays.

The invention comprises a walled chamber 2 corresponding in size to that of an ordinary room, say approximately nine feet high, eight to ten feet wide, and of any desired length, and this chamber is subdivided longitudinally by two parallel rows of curtains 3 and 4 to provide a central compartment or corridor 5 and side compartments 6 and 7. Entrance to the corridor is gained by a door 8, and the compartments behind the curtains contain elevated stationary racks 9 which are within convenient reach of the attendant for introducing the fresh supply and from which elevated position the trays may be shifted at the proper time to a tier of tilting racks 10 on a lower plane and suspended therefrom by links 11. A series of stationary racks 12 are also arranged beneath the tilting racks 10, and all of said racks are of open construction and of the same size to permit interchange of the shallow trays 13 for the eggs to be hatched. These trays are provided with open mesh bottoms 14 upon which the smaller ends of the eggs rest in close and solid formation, and each tray of eggs occupies the upper [illegible] for the first three days, and is then transferred to a place in the upper end of the tilting rack 10. During the next fifteen days the trays in the tilting rack are shifted from higher to lower planes therein and tilted at frequent intervals to stand in oppo-

INCUBATOR.

1,260. Specification of Letters Patent. Patented Apr. 16, 1918.

Application filed October 26, 1916. Serial No. 127,218.

*...ll whom it may concern:*

...e it known that I, SAMUEL B. SMITH, a ...en of the United States, residing at ...eland, in the county of Cuyahoga and ...te of Ohio, have invented certain new ...d useful Improvements in Incubators, of ...ich the following is a specification.

The improved apparatus and method, is ...rticularly designed for extensive operations wherein a chamber of large dimensions is adapted to contain thousands of eggs in separate trays arranged in tiers and the method of heating is such that the heated air is adapted to the eggs in various stages of incubation. There is a forced circulation of hot air through the chamber which is adapted preferably to maintain all eggs at temperatures between 100° and 105° Fahrenheit approximately and this improved system contemplates that fresh eggs will be placed in a horizontal plane, preferably by means of trays supported in horizontal planes, and after the eggs have been subject to the circulation of hot air for a predetermined time (the air circulating largely around the eggs) they will be placed in a tilted or inclined position in a different location but still subject to the same column of air and at this period of incubation they will be tilted in different planes at regular intervals during the time they remain in this latter position, and after they have remained for a predetermined time they will be again moved to a different position with reference to the ...l circulation of hot air and so placed ...that the air will tend to keep the ...low 105° temperature, and in this last ...position the air will be forced to pass ...the different eggs and will in effect ...a cooling medium for the eggs. The ...ture of circulating air should be such ...revent the eggs in the early stage of ...from falling below 100° and the ...velocity of the circulating air ...be such as to carry the heat away ...the eggs in the later stage of incubation thereby hold the temperature of ...at 105° or slightly below that. It ...that the temperature will re...practically the same throughout the ...of eggs, but the air is impelled with ...velocity to carry the heat away ...the eggs which happen to be in the advanced stage of incubation.

In the accompanying drawings:

Figure 1 is a cross section of my improved incubator.

Fig. 2 is a perspective view of one of the egg trays with one end removed to more clearly disclose the open mesh bottom.

Fig. 3 is a vertical section of the incubator on line 3—3, Fig. 1.

Fig. 4 is a perspective view of a portion of one of the tilting racks for the trays.

The invention comprises a walled chamber 2 corresponding in size to that of an ordinary room, say approximately nine feet high, eight to ten feet wide, and of any desired length, and this chamber is subdivided longitudinally by two parallel rows of curtains 3 and 4 to provide a central compartment or corridor 5 and side compartments 6 and 7. Entrance to the corridor is gained by a door 8, and the compartments behind the curtains contain elevated stationary racks 9 which are within convenient reach of the attendant for introducing the fresh supply and from which elevated position the trays may be shifted at the proper time to a tier of tilting racks 10 on a lower plane and suspended therefrom by links 11. A series of stationary racks 12 are also arranged beneath the tilting racks 10, and all of said racks are of open construction and of the same size to permit interchange of the shallow trays 13 for the eggs to be hatched. These trays are provided with open mesh bottoms 14 upon which the smaller ends of the eggs rest in close and solid formation, and each tray of eggs occupies the upper rack 9 for the first three days, and is then transferred to a place in the upper end of the tilting rack 10. During the next fifteen days the trays in the tilting rack are shifted from higher to lower planes therein and tilted at frequent intervals to stand in oppositely-inclined positions. The tilting of the eggs is preferably arranged to put the eggs substantially on their sides. When the eggs in the lower-most trays in the tilting racks 10 are about ready to hatch each tray is transferred to the stationary rack 12 where the chicks may be removed as occasion requires.

Each tilting rack 10 comprises perpendicular corner bars 15 pivotally united by a series of cross bars 16 carrying connecting angle irons 17 extending from front to rear

at each side and upon which the trays are adapted to be slidably supported. The links 11 are pivotally connected at the center of the uppermost cross bars 10 of each tilting rack, thus permitting an entire series of trays to be placed in an inclined position by merely raising or lowering one side of the rack by hand engagement. The weight and friction and balance of the parts causes the trays to remain in any shifted position, whether horizontal or inclined. The fans or series of fans 18 mounted upon the hinged trap doors 19 forming the ceiling of the central corridor 5 constitute the means for forcing the hot air through the chamber and there are circular openings 20 provided in said doors within which the fans are arranged properly. The longitudinal space 21 above the fans has open communication above the side walls 22 with the upper ends of the rack compartments behind the curtains 3 and 4 and these curtains extend a sufficient distance, as indicated in Fig. 1, to cause the heated air distributed by the fans to pass downwardly through the central corridor to a point near the bottom of the chamber where it can pass into the space occupied by the trays. As explained later the trays near the bottom are preferably arranged so that the air is forced to pass between the eggs in each tray thereby cooling or holding the temperature of those eggs down. Thence the air passes into spaces above the lower series of trays until it reaches the distributing space 21 above the fan. Coils of heating pipe 23 are arranged in the space 21 to heat the air and more or less fresh air may be taken in through the valved opening 24 above the space 21 and this fresh supply of air may be charged with steam to a greater or less degree by means of a valved [illegible] jet or pipe 26 see Fig. 3. The [illegible] the release of foul air [illegible] restricted capacity so as to prevent [illegible] of moisture. It is [illegible] openings and so [illegible] of the vital- [illegible] current [illegible] the chamber [illegible] trap doors, [illegible] easily reached [illegible] 3 is shown [illegible] at the right [illegible] the rack

lower trays and as the danger is that the temperature will rise in these eggs to a point injurious to incubation the improved method disclosed herein permits the circulating air to act as a medium to prevent the over heating at this stage of incubation and this is accomplished by promoting an induced draft within the lower trays. It is obvious that the fans can be so arranged and can be operated at such speed as to cause the hot air to circulate fast enough to keep the temperature throughout the chamber between the limits of 100° and 105°.

It, therefore, appears that the improved apparatus and method contemplates the application of hot air circulating in a column with such speed as to keep the temperature substantially uniform and so arranging the eggs that the fresh eggs are placed at one point in the column of air and held in a horizontal plane until they reach a predetermined stage of incubation and then put at a different point in the same column of air and kept in planes inclined to the horizontal and thereafter placed at such a point in the column of air that the forced draft of air acts to hold the eggs at a uniform temperature and to prevent them from becoming overheated and thereafter placing the eggs into final position for the hatching operation.

Any suitable thermostatic means may be employed for regulating the temperature, such for instance as a thermostat commonly employed in incubators of a well-known construction and illustrated in Letters-Patent No. 1,111,138, dated September 22nd, 1914, which thermostat may be suitably connected to the valve controlling the steam or hot water, as the case may be, which passes through the pipes 23.

Having thus described my invention, I claim:—

1. The method of hatching a plurality of eggs by arranging them at different levels in a closed chamber having restricted openings of sufficient capacity for the escape of foul air without undue loss of moisture and supplying a current of heated air, said current being created by means other than variations of temperature and of sufficient velocity to circulate, diffuse and maintain air throughout the chamber at substantially the same temperature, whereby the air may be vitalized, the moisture conserved

friction and balance of the parts cause the trays to remain in any shifted position, whether horizontal or inclined. The fans or series of fans 18 mounted upon the hinged trap doors 19 forming the ceiling of the central corridor 5 constitute the means for forcing the hot air through the chamber and there are circular openings 20 provided in said doors within which the fans are arranged properly. The longitudinal space 21 above the fans has open communication above the side walls 22 with the upper ends of the rack compartments behind the curtains 3 and 4 and these curtains extend a sufficient distance, as indicated in Fig. 1, to cause the heated air distributed by the fans to pass downwardly through the central corridor to a point near the bottom of the chamber where it can pass into the space occupied by the trays. As explained later the trays near the bottom are preferably arranged so that the air is forced to pass between the eggs in each tray thereby cooling or holding the temperature of those eggs down. Thence the air passes into spaces above the lower series of trays until it reaches the distributing space 21 above the fan. Coils of heating pipe 23 are arranged in the space 21 to heat the air and more or less fresh air may be taken in through the valved opening 24 above the space 21 and this fresh supply of air may be charged with steam to a greater or less degree by means of a valve controlled jet or pipe 26 see Fig. 3. The outlets 25 for the release of foul air are made of such restricted capacity as to prevent the undue escape of moisture. It is possible to limit the openings and so conserve the moisture by reason of the vitalizing effect of the power driven current upon the body of the air within the chamber. By lowering the hinged trap doors, the motor and fan are also easily reached for inspection, etc.

In Fig. 3 only a single-curtain 3 is shown in place, the curtain or curtains at the right being entirely removed to disclose the racks and trays in full lines, and it will be also noted that the vertical spaces 27 between the adjacent tilting racks 10 are closed at their lower ends by flexible strips of fabric which are attached to and extend upward at each side of each rack so as to compel the air to circulate through the mesh bottom and around and about each egg as heretofore referred to, and as the eggs further advanced in incubation are contained in these

obvious that the fans can be so arranged that they can be operated at such speed as to cause the hot air to circulate fast enough to keep the temperature throughout the chamber between the limits of 100° and 105°.

It, therefore, appears that the improved apparatus and method contemplates the application of hot air circulating in a column with such speed as to keep the temperature substantially uniform and so arranging the eggs that the fresh eggs are placed at one point in the column of air and held in a horizontal plane until they reach a predetermined stage of incubation and then put at a different point in the same column of air and kept in planes inclined to the horizontal and thereafter placed at such a point in the column of air that the forced draft of air acts to hold the eggs at a uniform temperature and to prevent them from becoming overheated and thereafter placing the eggs into final position for the hatching operation.

Any suitable thermostatic means may be employed for regulating the temperature, such for instance as a thermostat commonly employed in incubators of a well-known construction and illustrated in Letters-Patent No. 1,111,138, dated September 22nd, 1914, which thermostat may be suitably connected to the valve controlling the steam or hot water, as the case may be, which passes through the pipes 23.

Having thus described my invention, I claim:—

1. The method of hatching a plurality of eggs by arranging them at different levels in a closed chamber having restricted openings of sufficient capacity for the escape of foul air without undue loss of moisture and applying a current of heated air, said current being created by means other than variations of temperature and of sufficient velocity to circulate, diffuse and maintain the air throughout the chamber at substantially the same temperature, whereby the air will be vitalized, the moisture conserved and the units of heat will be carried from the eggs in the more advanced stage of incubation to those in a less advanced stage for the purpose specified.

2. The method of hatching a plurality of eggs by arranging them at different levels in a closed chamber having restricted openings of sufficient capacity for the escape of foul air without undue loss of moisture and applying a power driven current of heated

in an adjacent chamber through openings into the egg chamber, said current being of sufficient velocity to circulate, diffuse and maintain the air throughout the egg chamber at substantially the same temperature, whereby the air will be vitalized, the moisture conserved and the units of heat will be carried from the eggs in the more advanced stage of incubation to those in a less advanced stage for the purpose specified.

3. The method of hatching a plurality of eggs by arranging them at different levels in a closed chamber having restricted openings of sufficient capacity for the escape of foul air without undue loss of moisture and applying a vertically directed current of heated air in an adjacent chamber to circulate in said egg chamber through upper and lower openings between said chambers, said current being created by mechanically moving means of such velocity as to diffuse and maintain the air throughout the egg chamber at substantially the same temperature whereby the air will be vitalized, the moisture conserved and the units of heat will be carried from the eggs in the more advanced stage of incubation to those in the less advanced stage for the purpose specified.

4. In an incubator, a closed chamber having a central corridor provided with an air-distributing space in its upper portion and a power-driven fan in said space, curtains at each side of said corridor, arranged to permit the air to circulate from the bottom of the chamber into the part of the chamber behind the curtains, passageways connecting the air distributing space with the corridor and the parts of said chamber behind the curtains, separate stationary and tilting racks behind said curtains, egg-trays having open-mesh bottoms removably mounted upon said racks, and means to heat the air circulated through said chamber.

5. In an incubator, a closed chamber with a vertically disposed partition to provide a corridor having upper and lower passage ways to said chamber, egg trays arranged at different levels in said chamber, a power driven fan creating a current in said corridor to circulate through said passage ways and egg trays, said chamber having restricted openings of sufficient capacity for the discharge of foul air without undue loss of moisture and means to heat the air circulated through said chamber.

In testimony whereof, I have hereunto set my hand this 20th day of October, 1916.

SAMUEL B. SMITH.

Witnesses:
HANNAH D. PLAIN,
IDA M. SMITH.

# 1916

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1. Application ... 1 papers O K
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4. Rejection MAR 24 1917
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7. Aemendment C APR 23 1917
8. Rejection MAY 3 1917
9. JUN 2 1917
10. Aemendment C JUN 28 1917
11. Rejection JUN 30 1917
12. Criminal E & Exhibits June 7-1926
13. Notice of Suit 4/17/22
14. Notice of Suit, July 26-23
15. Notices of Suit, Oct 27, 1923
16. Notice of Suit Nov. 10-1923
17. (a) Oct. 17-1924
17. Notice of Suit, Mar. 13-1924
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25. Notice of Suit Oct. 11-1924
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49. Notice of Suit April 6-1928
50. Not of Suit April 23-1928


[See other side for continuation]

No. 656,780. Patented Aug. 28, 1900.

G. T. WOODS.

INCUBATOR.

(Application filed May 26, 1900.)

(No Model.)

Fig. 1.

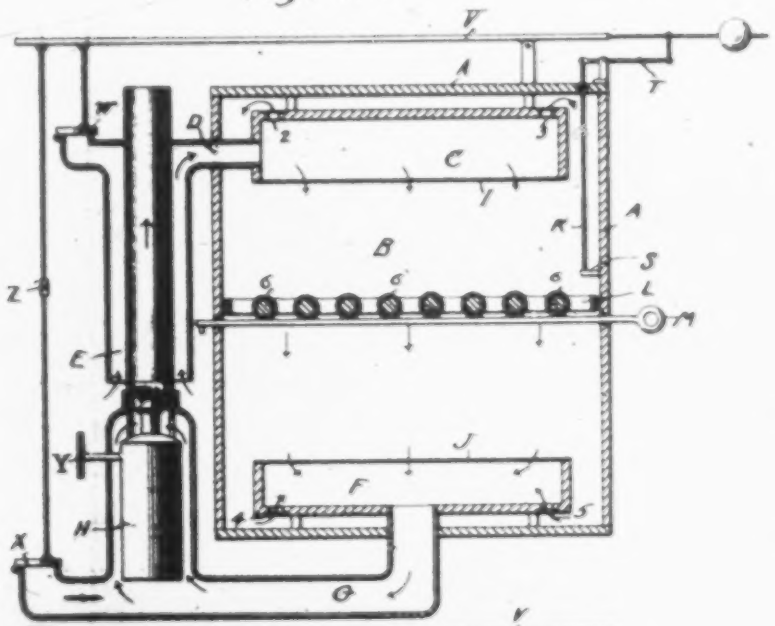



Fig. 2.

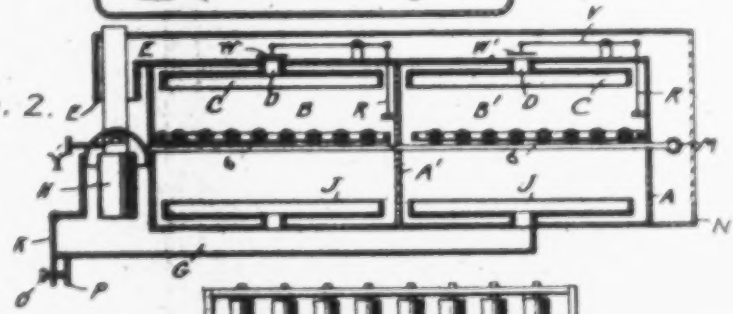



Fig. 3.

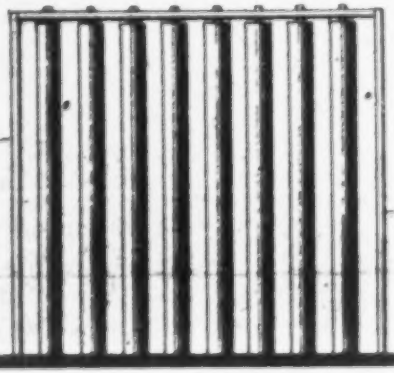


Fig. 1.

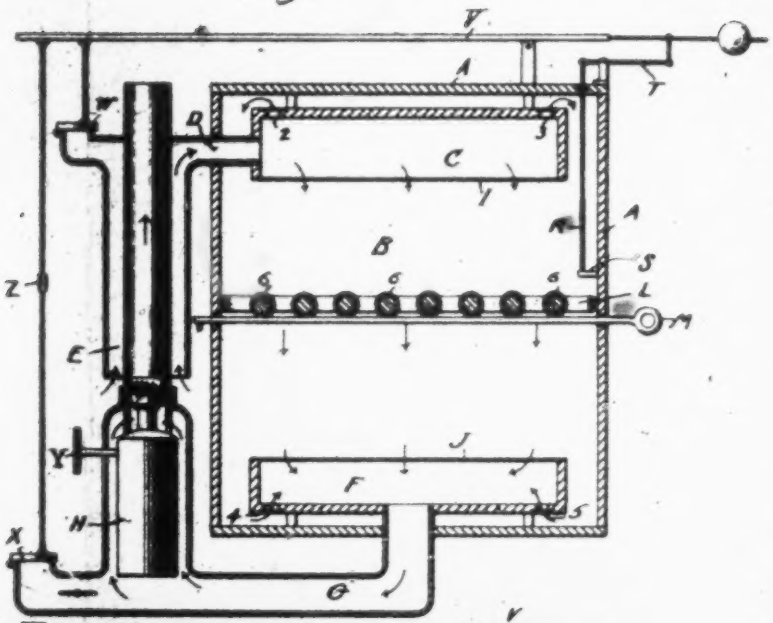



Fig. 2.

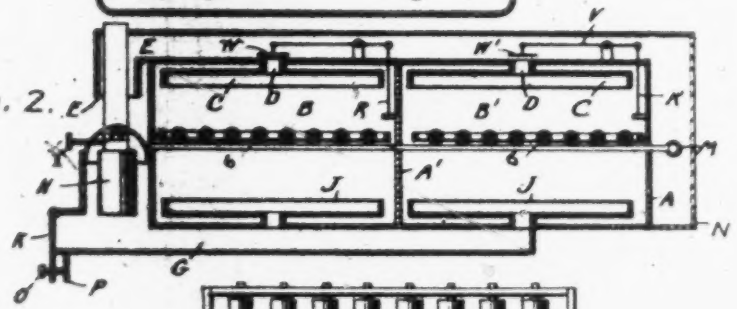
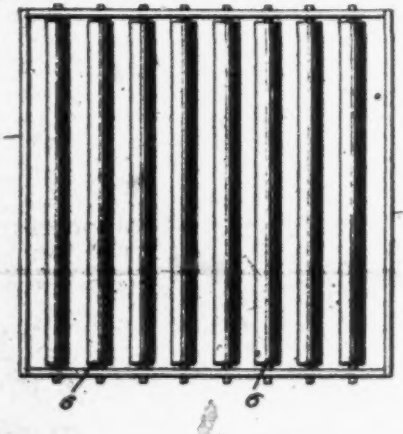



Fig. 3.




Witnesses:
Frank O. Adams.
C. P. Hayes.

Inventor:
F. T. Woods.

# UNITED STATES PATENT OFFICE.

GRANVILLE T. WOODS, OF NEW YORK, N. Y.

## INCUBATOR.

SPECIFICATION forming part of Letters Patent No. 656,760, dated August 28, 1900.

Application filed May 25, 1900. Serial No. 18,013. (No model.)

*To all whom it may concern:*

Be it known that I, GRANVILLE T. WOODS, a citizen of the United States, and a resident of New York, N. Y., have invented certain new and useful Improvements in Incubators, of which the following is a specification.

My invention relates to improvements in incubators or egg-hatching machines, and has for one of its objects to ventilate the hatching-chamber in such a manner that the humidity of the air within the hatching-chamber will at all times be about the same as that of the outer free atmosphere. Meanwhile the said air will be moving slowly, positively, and bodily through the said hatching-chamber from the point of entrance into said chamber to the place of exit therefrom.

Another object of my present invention is to maintain a practically-even temperature throughout the entire interior of the hatching-chamber along the side walls, as well as in the center thereof.

In a properly-devised incubator the body of heated air should have a slow but positive downward movement toward the eggs, and the temperature of the heated air should be automatically regulated, and the entire space within the walls of the hatching-chamber should be of the same temperature. In my present invention I prefer to construct the entire walls of the hatching-chamber of a material and in a manner which is impermeable to air or gas. In addition to the hatching-chamber I preferably employ two other or auxiliary chambers, which may be arranged (if so preferred) within the said hatching-chamber. One of said auxiliary chambers I shall term a "distributing" inlet or chamber, and it is arranged near the under side of the outer wall of said hatching-chamber and has an opening leading to the outer free atmosphere. The other auxiliary chamber I shall

Figure 1 represents a vertical section through the aforesaid three chambers of the incubator and the ducts connected therewith. Fig. 2 illustrates a plan whereby several hatching-chambers may be so connected that one source of heat will supply all of said chambers. Fig. 3 exhibits a plan view of the removable egg-tray shown in section at Figs. 1 and 2.

In Fig. 1 the walls A A, &c., inclose the hatching-chamber.

C is the distributing-chamber, which is suspended from or held near the upper wall of said hatching-chamber. The said distributing-chamber communicates through pipe or duct D (and heating-duct E) with the free outer air.

F is the exhaust-chamber, located slightly above the bottom wall or floor of the hatching-chamber B B. Exhaust-chamber F communicates through duct G with the flame of heater H.

The interior of hatching-chamber C communicates with the interior of chamber B through the large porous diaphragm I and small porous diaphragms 2 3. The interior of chamber B communicates with the interior of chamber F through the large porous diaphragm J and small porous diaphragms 4 5. The said diaphragms may be composed of cotton cloth or any other suitable porous material. The diaphragms herein shown and specified are porous—that is to say, they are full of minute apertures, through which the air passes in diffused minute quantities, thereby compelling the air-movement within said chamber to be so slow that the outgoing air and gases can take no more moisture from the eggs within said chamber than the incoming fresh air brings in. The egg-tray shown is composed of rollers 6 6, &c., upon which the eggs are arranged for incuba-

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My invention will be more fully understood by reference to the accompanying drawings, in which—

Figure 1 represents a vertical section through the aforesaid three chambers of the incubator and the ducts connected therewith. Fig. 2 illustrates a plan whereby several hatching-chambers may be so connected that one source of heat will supply all of said chambers. Fig. 3 exhibits a plan view of the removable egg-tray shown in section at Figs. 1 and 2.

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The interior of hatching-chamber C communicates with the interior of chamber B through the large porous diaphragm I and small porous diaphragms 2 3. The interior of chamber B communicates with the interior of chamber F through the large porous diaphragm J and small porous diaphragms 4 5. The said diaphragms may be composed of cotton cloth or any other suitable porous material. The diaphragms herein shown and specified are porous—that is to say, they are full of minute apertures, through which the air passes in diffused minute quantities, thereby compelling the air-movement within said chamber to be so slow that the outgoing air and gases can take no more moisture from the eggs within said chamber than the incoming fresh air brings in. The egg-tray shown is composed of rollers 6 6, &c., upon which the eggs are arranged for incubation. These rollers are preferably felt-covered and are carried by the frame L, as shown in Fig. 3, and they rest upon movable bar M. Bar M when moved will cause the said rollers to rotate, and thereby turn the eggs. It will be observed that the small diaphragms 2 3 4 5 assist in evenly distributing the downwardly-moving body of air as it passes through the incubator. A thermostat is shown at R, Fig. 1, the lower end of which

is secured to the side wall by means of bracket S, while the upper end connects with lever T, which in turn actuates lever V, thereby controlling valves W X, each of which is hinged to its individual support. As the temperature rises within said hatching-chamber the thermostat expands, and acting through levers T V it first causes valve W to open, and simultaneously therewith said thermostat will cause the "slack" or "lost motion," (which is purposely left in link Z,) and then the slightest increase in the expansion of said thermostat will cause valve X to open. Thus it will be seen that if valve W does not sufficiently check the rise of the temperature within said hatching-chamber then valve X opens and allows air to pass directly from the free outer atmosphere to the heater-flame, so that the movement of the air through the hatching-chamber will temporarily be abnormally slow. Of course when the temperature falls sufficiently the thermostat will contract and cause the aforesaid valves to close.

It has been found that a heater sufficiently large to properly heat the hatching-chamber should obtain from the surrounding outer atmosphere a portion of the air for the maintenance of the heater-flame. Thereby the amount of air drawn from the hatching-chamber within a given time will be such that (during incubation) the air movement therein will approximate that due to the natural movement of the gases thrown off by the incubating eggs. In such cases link Z is adjusted so as to take up the lost motion between lever V and valve X; therefore valve W will normally rest on its seat, while valve X will be raised from its seat, and thereby air will be admitted directly from the onter atmosphere to the heater-flame. Then if the thermostatic regulator should be made to operate both of said valves would work in unison. Therefore it will be noted that there will be no cooling of the air-heating surfaces during incubation and no undue rapid movement of the air in the hatching-chamber and that the ingress and egress of the air passing through the hatching-chamber is preferably controlled by minute pores, in contradistinction to large apertures or perforations. The pipe covered by valve X may extend upward to any desired height.

The preferred operation of the air in the incubator is as follows: The heater being lighted will cause the air which is to be used for incubation to be heated [illegible] through ducts [illegible]

I have found that when it is desired to have a large number of eggs incubating simultaneously and the entire number supplied with heat from one source it will be most successful where the incubator system has a plurality of comparatively-small hatching-chambers, (instead of one large one,) each of which should have an independent temperature-regulator, while one source of heat should be common to and supply all of said chambers. Whether steam, water, air, or electricity is used to distribute the heat to the several chambers, each regulator should control that portion of steam, water, air, or electricity which heats the particular chamber to which a given regulator is assigned, and the action of the regulators may be made to assist in regulating the source of heat. Furthermore, the entire number of eggs—say, one thousand or two thousand—contained in any one hatching-chamber should be spread out on the movable trays, so that all would occupy as near one level as possible. One arrangement embodying such ideas is illustrated at Fig. 2, in which two hatching-chambers B B' are separated by wall A'. The thermostats or temperature-regulators R R are each independent of the other and control valves W W', respectively, so that the heat (supplied from heater H) and the air passing through duct E may be automatically regulated before it reaches the eggs within the interior of said hatching-chambers. Duct E may extend over the edges and down the sides of the hatching-chambers to point N and may be of any suitable width. Thus it may form a hall through which the interior of said chambers can be reached. It is obvious that the porous diaphragms I J, &c., may be of any suitable size, and they will prevent air-currents within said hatching-chambers, and therefore the natural humidity of the air will supply ample moisture to the eggs while they are incubating. Valve K may be used, if so desired, to assist in regulating the air movement simultaneously in all of said hatching-chambers, and it may be adjusted by hand by means of screw O, which rests against leg P. Thus it will be noted that the arrangement shown in Fig. 2 is such that a slow downward movement of the air is maintained simultaneously in all of said chambers.

The new and useful result obtained by supplying heat from a single source to a plurality of hatching-chambers is the economy [illegible] single incubators in use in one [illegible]

the thermostat expands, and acting through levers T V it first causes valve W to open, and simultaneously therewith said thermostat will cause the "slack" or "lost motion," (which is purposely left in link Z,) and then the slightest increase in the expansion of said thermostat will cause valve X to open. Thus it will be seen that if valve W does not sufficiently check the rise of the temperature within said hatching-chamber then valve X opens and allows air to pass directly from the free outer atmosphere to the heater-flame, so that the movement of the air through the hatching-chamber will temporarily be abnormally slow. Of course when the temperature falls sufficiently the thermostat will contract and cause the aforesaid valves to close.

It has been found that a heater sufficiently large to properly heat the hatching-chamber should obtain from the surrounding outer atmosphere a portion of the air for the maintenance of the heater-flame. Thereby the amount of air drawn from the hatching-chamber within a given time will be such that (during incubation) the air movement therein will approximate that due to the natural movement of the gases thrown off by the incubating eggs. In such cases link Z is adjusted so as to take up the lost motion between lever V and valve X; therefore valve W will normally rest on its seat, while valve X will be raised from its seat, and thereby air will be admitted directly from the outer atmosphere to the heater-flame. Then if the thermostatic regulator should be made to operate both of said valves would work in unison. Therefore it will be noted that there will be no cooling of the air-heating surfaces during incubation and no undue rapid movement of the air in the hatching-chamber and that the ingress and egress of the air passing through the hatching-chamber is preferably controlled by minute pores, in contradistinction to large apertures or perforations. The pipe covered by valve X may extend upward to any desired height.

The preferred operation of the air in the incubator is as follows: The heater being lighted will cause the air which is to be used for incubation to be heated in chamber or duct E and then drawn through ducts K and D, thence into distributing-chamber C through diaphragms 2 3 and I, thence downward through the hatching-chamber B, and then through diaphragms 4 5 and J into exhaust-chamber F through duct G to the heater-flame, and thence out into the free air. The fire in the heater may be regulated by adjusting a stem which extends from the heater through an opening to the outside and terminates in wheel Y.

bers, (instead of one large one,) each of which should have an independent temperature regulator, while one source of heat should be common to and supply all of said chambers. Whether steam, water, air, or electricity is used to distribute the heat to the several chambers, each regulator should control that portion of steam, water, air, or electricity which heats the particular chamber to which a given regulator is assigned, and the action of the regulators may be made to assist in regulating the source of heat. Furthermore, the entire number of eggs—say, one thousand or two thousand—contained in any one hatching-chamber should be spread out on the movable trays, so that all would occupy as near one level as possible. One arrangement embodying such ideas is illustrated at Fig. 2, in which two hatching-chambers B B' are separated by wall A'. The thermostats or temperature-regulators R R are each independent of the other and control valves W W, respectively, so that the heat (supplied from heater H) and the air passing through duct E may be automatically regulated before it reaches the eggs within the interior of said hatching-chambers. Duct E may extend over the edges and down the sides of the hatching-chambers to point N and may be of any suitable width. Thus it may form a hall through which the interior of said chambers can be reached. It is obvious that the porous diaphragms I J, &c., may be of any suitable size, and they will prevent air-currents within said hatching-chambers, and therefore the natural humidity of the air will supply ample moisture to the eggs while they are incubating. Valve K may be used, if so desired, to assist in regulating the air movement simultaneously in all of said hatching-chambers, and it may be adjusted by hand by means of screw O, which rests against lug P. Thus it will be noted that the arrangement shown in Fig. 2 is such that a slow downward movement of the air is maintained simultaneously in all of said chambers.

The new and useful result obtained by supplying heat from a single source to a plurality of hatching-chambers is the economy both in time and fuel. For instance, suppose there are thirty single incubators in use in one plant and that to trim and fill one lamp consumes ten minutes. Now as each lamp requires the same amount of attention each day there would be five hours each day given to the attention required by the lamps. By means of my present invention no more than one-half hour each day would be required to attend to the single source of heat-supply. It is well known that one large heating apparatus is more efficient than a plurality of small ones.

In the construction of the system herein set forth I do not limit myself to the exact details of arrangement shown and described. Neither do I limit myself to any particular kind of heater or any other thing so long as I remain within the broad scope of my invention.

While I have termed my present invention an "incubator" and called chamber B the "hatching-chamber," it should not be understood that I confine my invention to incubation when it is obvious that it may be used for other purposes where it is desired to maintain a practically-uniform temperature throughout a slowly-moving body of air. For instance, the reception or hatching chamber may be utilized as a brooder or artificial protector for chickens.

What I claim is—

1. A machine of the character described consisting of a reception or hatching chamber, an air-inlet chamber having an air-distributing, porous diaphragm through which air is slowly and evenly delivered into the reception or hatching chamber, the said air-inlet chamber being arranged near the upper wall of said reception or hatching chamber, means for heating said air, an outlet-chamber having a porous diaphragm through which air is slowly and evenly exhausted from said reception or hatching chamber, said outlet being at or near the bottom of said reception or hatching chamber, and means for automatically regulating the temperature of said reception or hatching chamber, substantially as set forth.

2. A machine of the character described, consisting of a reception or hatching chamber devoid of supplied moisture, an air inlet or chamber having an air-distributing porous diaphragm through which air is delivered into said reception or hatching chamber, the said air inlet or chamber being near the upper wall of said reception or hatching chamber, means for heating said air, an outlet or exhaust chamber having a porous diaphragm through which air is evenly and slowly exhausted from said reception or hatching chamber, said outlet being at or near the bottom of said reception or hatching chamber, means for automatically regulating the temperature of said reception or hatching chamber, a pipe or duct arranged substantially as described, so that a tubular connection is established between the said outlet or exhaust and the heater, whereby a slow down-

hatching-chamber, and through which the air is exhausted from said reception or hatching chamber and means for automatically regulating the temperature of said reception or hatching chamber.

4. A machine of the character described, consisting of a reception or hatching chamber, an independently-constructed air-inlet chamber having an air-distributing porous diaphragm through which air is evenly delivered into said hatching-chamber, the said air-inlet being near the upper wall of said hatching-chamber, means whereby said air is heated, an independently-constructed air outlet or exhaust chamber having means through which air is evenly and slowly exhausted from said reception or hatching chamber, said outlet being at or near the bottom of said hatching-chamber, means for automatically regulating the temperature of the air in said hatching-chamber, a pipe connected to said exhaust-chamber, and a valve connected to said pipe whereby the amount of air drawn from said hatching-chamber, may be regulated.

5. A machine of the character described, consisting of a plurality of reception or hatching chambers, each having an independent temperature-regulator, an independent air-inlet, and an independent air-outlet, the said inlets and outlets being obstructed by porous diaphragms, a source of heat common to and supplying all of said chambers, and means whereby a slow air movement is maintained simultaneously in all of said chambers, for the purpose set forth.

6. A machine of the character described, consisting of a plurality of reception or hatching chambers each having an independent air-inlet, an independent air-outlet and an independent temperature-regulator, a single heating device having a tubular communication with all of said chambers, and means actuated by the heat from said device whereby a slow, even movement of the heated air is maintained, simultaneously, in all of the said chambers, substantially as set forth.

7. The combination of a plurality of reception or hatching chambers, each provided with an independent air-inlet, an independent air-outlet and an independent thermostat, a heater common to and supplying all of said chambers and a pipe or tube common to all of the air-outlets of said chambers, and leading therefrom to the fire in said heater, whereby a slow, bodily movement of the heated air

...ubator" and called chamber B the "hatching-chamber," it should not be understood that I confine my invention to incubation when it is obvious that it may be used for other purposes where it is desired to maintain a practically-uniform temperature throughout a slowly-moving body of air. For instance, the reception or hatching chamber may be utilized as a brooder or artificial protector for chickens.

What I claim is—

1. A machine of the character described consisting of a reception or hatching chamber, an air-inlet chamber having an air-distributing, porous diaphragm through which air is slowly and evenly delivered into the reception or hatching chamber, the said air-inlet chamber being arranged near the upper wall of said reception or hatching chamber, means for heating said air, an outlet-chamber having a porous diaphragm through which air is slowly and evenly exhausted from said reception or hatching chamber, said outlet being at or near the bottom of said reception or hatching chamber, and means for automatically regulating the temperature of said reception or hatching chamber, substantially as set forth.

2. A machine of the character described, consisting of a reception or hatching chamber devoid of supplied moisture, an air inlet or chamber having an air-distributing porous diaphragm through which air is delivered into said reception or hatching chamber, the said air inlet or chamber being near the upper wall of said reception or hatching chamber, means for heating said air, an outlet or exhaust chamber having a porous diaphragm through which air is evenly and slowly exhausted from said reception or hatching chamber, said outlet being at or near the bottom of said reception or hatching chamber, means for automatically regulating the temperature of said reception or hatching chamber, a pipe or duct arranged substantially as described, so that a tubular connection is maintained between the said outlet or exhaust chamber and the heater, whereby a slow downward air movement is maintained within said reception or hatching chamber.

3. A machine of the character described, consisting of a reception or hatching chamber, an air inlet or chamber through which air is slowly delivered into said reception or hatching chamber, means for heating said air, an outlet or chamber having a porous diaphragm which assists in maintaining a slow and even bodily air movement, within said chamber having an air-distributing porous diaphragm through which air is evenly delivered into said hatching-chamber, the said air-inlet being near the upper wall of said hatching-chamber, means whereby said air is heated, an independently-constructed air outlet or exhaust chamber having means through which air is evenly and slowly exhausted from said reception or hatching chamber, said outlet being at or near the bottom of said hatching-chamber, means for automatically regulating the temperature of the air in said hatching-chamber, a pipe connected to said exhaust-chamber, and a valve connected to said pipe whereby the amount of air drawn from said hatching-chamber, may be regulated.

5. A machine of the character described, consisting of a plurality of reception or hatching chambers, each having an independent temperature-regulator, an independent air-inlet, and an independent air-outlet, the said inlets and outlets being obstructed by porous diaphragms, a source of heat common to and supplying all of said chambers, and means whereby a slow air movement is maintained simultaneously in all of said chambers, for the purpose set forth.

6. A machine of the character described, consisting of a plurality of reception or hatching chambers each having an independent air-inlet, an independent air-outlet and an independent temperature-regulator, a single heating device having a tubular communication with all of said chambers, and means actuated by the heat from said device whereby a slow, even movement of the heated air is maintained, simultaneously, in all of the said chambers, substantially as set forth.

7. The combination of a plurality of reception or hatching chambers, each provided with an independent air-inlet, an independent air-outlet and an independent thermostat, a heater common to and supplying all of said chambers and a pipe or tube common to all of the air-outlets of said chambers, and leading therefrom to the fire in said heater, whereby a slow, bodily movement of the heated air is maintained, simultaneously in all of said chambers, substantially as set forth.

8. A machine of the character described, consisting of a reception or hatching chamber, an air-inlet communicating with the interior of said chamber, through an air-spreading horizontally-arranged minutely-apertured diaphragm, a second minutely-apertured diaphragm horizontally arranged between the interior of said chamber and the

air-outlet for the same, the second diaphragm being adapted to assist the first diaphragm to spread the air evenly throughout the said chamber, and to retard the air movement therein, means whereby said air is heated, and means whereby the temperature thereof is regulated, said temperature-regulating means consisting of two valves having suitable thermostatic connections which are adapted to operate said valves differentially, substantially as and for the purpose set forth.

9. A machine of the character described, consisting of a reception or hatching chamber devoid of supplied moisture, an independently-constructed air-inlet chamber having an air-distributing porous diaphragm through which air is evenly delivered into said hatching-chamber, the said air-inlet being near the upper wall of said hatching-chamber, means whereby said air is heated, an independently-constructed air outlet or exhaust chamber having a porous diaphragm through which air is evenly and slowly exhausted from said reception or hatching chamber, said outlet being at or near the bottom of said hatching-chamber, means for automatically regulating the temperature of the air in said hatching-chamber, and an upwardly-extending pipe or flue, leading from said exhaust-chamber, through the heater whereby a slow downward draft is maintained through said hatching-chamber, for the purpose set forth.

10. A machine of the character described consisting of a reception or hatching chamber, an air-inlet chamber communicating with the interior of said hatching-chamber, through an air-spreading, horizontally-arranged, minutely-apertured diaphragm, a second minutely-apertured diaphragm horizontally arranged between the interior of said hatching-chamber and an air-outlet chamber, the second diaphragm being adapted and arranged to assist the first-mentioned diaphragm to spread the air evenly throughout the said hatching-chamber, and to retard the air movement therein, means whereby the said air is heated, means whereby the temperature thereof is regulated and means whereby a slow downward draft is maintained through said hatching-chamber, for the purpose set forth.

In testimony that I claim the foregoing as my invention I have signed my name, in presence of two witnesses, this 18th day of May, 1900.

GRANVILLE T. WOODS.

Witnesses:
JAMES A. DONNELLY,
FRANK S. OBER.

Also introduced as Defendants' Exhibit No. 47.

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G. E. GOLDSTEIN.

APPARATUS FOR CURING OR ARTIFICIALLY AGING CIGARS.

APPLICATION FILED JUNE 20, 1914.

1,137,752. Patented May 4, 1915.

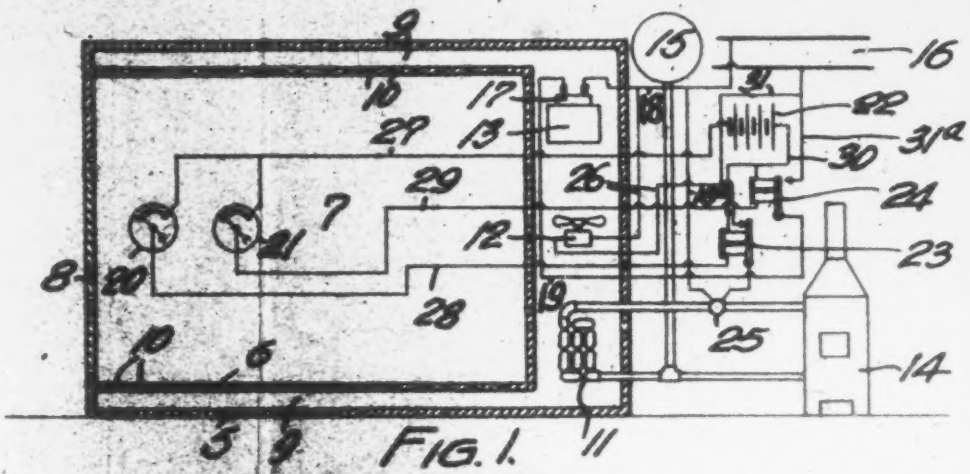



FIG. 1.

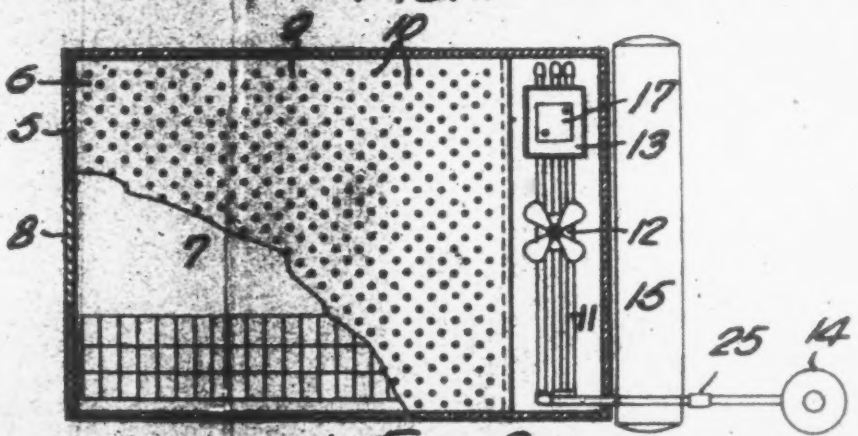
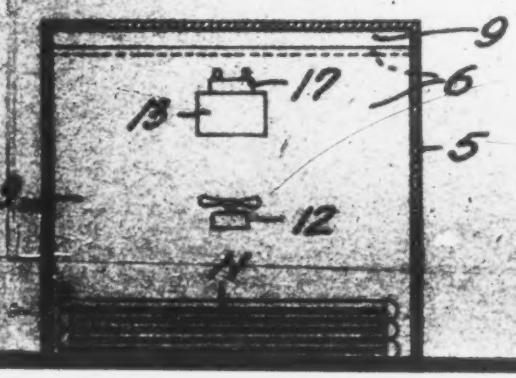



FIG. 2.



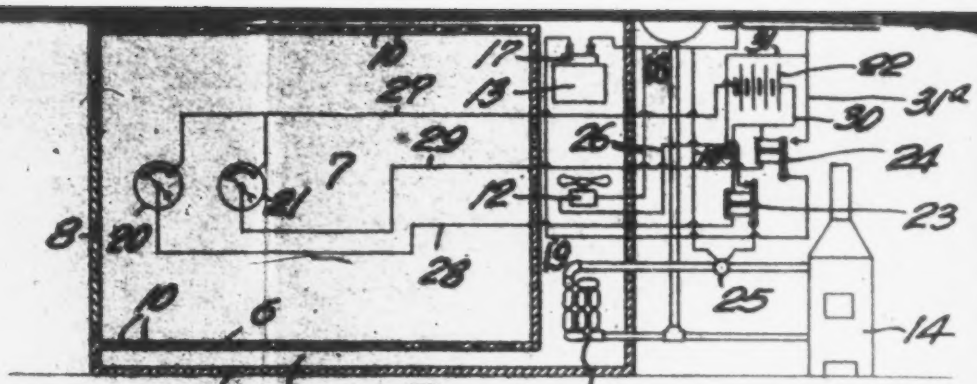



FIG. 1.

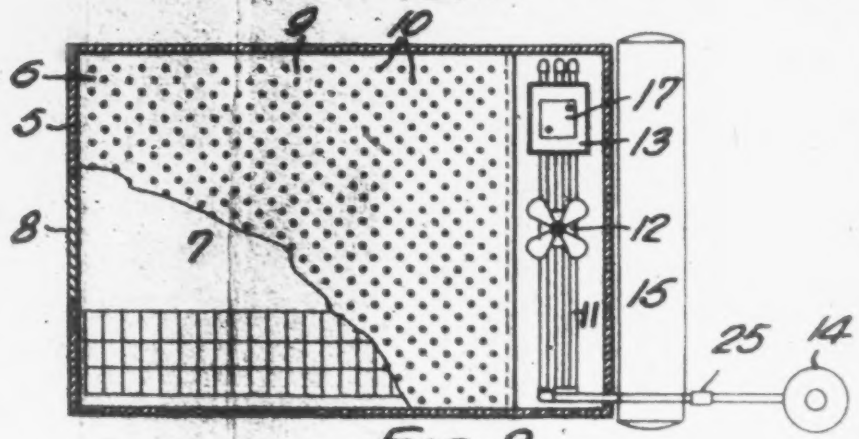



FIG. 2.

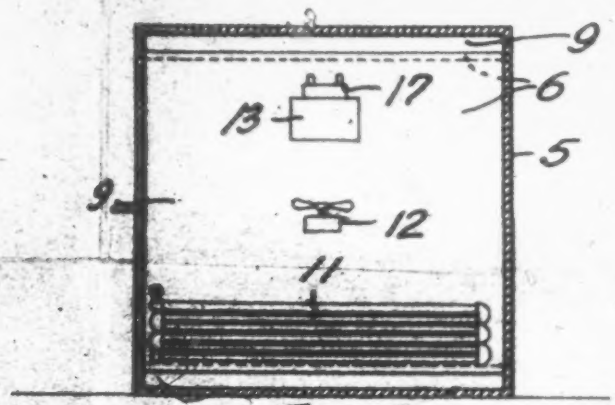



FIG. 3.

Witnesses

[illegible]

[illegible]

Inventor
G. E. Goldstein

By
Fetherstonhaugh & Co
His Attorneys

# UNITED STATES PATENT OFFICE.

GEORGE E. GOLDSTEIN, OF MONTREAL, QUEBEC, CANADA.

## APPARATUS FOR CURING OR ARTIFICIALLY AGING CIGARS.

1,137,752. Specification of Letters Patent. Patented May 4, 1915.

Application filed June 20, 1914. Serial No. 846,294.

*To all whom it may concern:*

Be it known that I, GEORGE E. GOLDSTEIN, of the city of Montreal, in the Province of Quebec and Dominion of Canada, a citizen of the Dominion of Canada, have invented certain new and useful Improvements in Apparatus for Curing or Artificially Aging Cigars, of which the following is a full, clear, and exact description.

This invention relates to improvements in apparatus for curing or artificially aging cigars or other forms of manufactured tobacco, and the object of the invention is to provide an apparatus which will operate automatically to maintain the proper temperature, humidity and circulation of the air coming in contact with the cigars.

The device consists essentially of a double walled chamber within which the cigars are stored. The inner wall is perforated, and air heating, humidifying and circulating means are provided in the space between the inner and outer walls of the chamber, so that the air is drawn from within the inner wall into the space between the inner and outer walls, brought to proper temperature and moisture, and redelivered within the inner wall. An electric thermometer and hygrometer are provided within the inner wall and automatically regulate the humidifying and heating apparatus to maintain as nearly as possible uniform conditions.

In the drawings which illustrate the invention:—Figure 1 is a vertical longitudinal section of the chamber showing the various elements of the apparatus diagrammatically. Fig. 2 is a plan view of the apparatus, the electrical equipment being omitted. Fig. 3 is a rear elevation of the device, the outer wall being removed.

Referring more particularly to the drawings, clearly shown in the drawings. The heating coil is connected to a heater 14 provided with a feed tank 15 for supplying water and maintaining pressure for circulation. The fan 12 is operated preferably by electric current drawn from the mains 16. The humidifying tank 13 contains an electric heating element 17 operated by current drawn from one of the mains 16 through wire 18 and returned to the opposite main through wire 19.

Within the chamber 7, an electric thermometer or thermostat 20 and an electric hygrometer 21 are provided, each having a fixed and a moving contact. The thermometer and hygrometer are electrified by current from a battery 22, and according as they make or break the battery circuits operate relay 23 and 24 respectively. The relay 23 is arranged to open and close the circuit of the heater 17, and the relay 24 is arranged to open and close the circuit of an electrically operated valve 25 located between the heater 14 and coil 11. The fan 12 is operated by current flowing from and to the mains through wires 26. Current flows from the battery through the wire 27 to both thermometer and hygrometer, and from the thermometer through wire 28 to the relay 23, and from the hygrometer through wire 29 to the relay 24, and from the relays back to the battery through wire 30. Current flows from the main 16 through wires 18 and 18ª to the heater 17 and valve 25, and returns through the armatures of the relays and wires 31 and 31ª.

The operation of the device is extremely simple. If the humidity rises above the set limit of variation, the instrument 21 makes contact, which energizes the magnet of the relay to draw up its armature, and thus

Patented May 4, 1915.

Application filed June 20, 1914. Serial No. 846,294.

*To all whom it may concern:*

Be it known that I, GEORGE E. GOLDSTEIN, of the city of Montreal, in the Province of Quebec and Dominion of Canada, a citizen of the Dominion of Canada, have invented certain new and useful Improvements in Apparatus for Curing or Artificially Aging Cigars, of which the following is a full, clear, and exact description.

This invention relates to improvements in apparatus for curing or artificially aging cigars or other forms of manufactured tobacco, and the object of the invention is to provide an apparatus which will operate automatically to maintain the proper temperature, humidity and circulation of the air coming in contact with the cigars.

The device consists essentially of a double walled chamber within which the cigars are stored. The inner wall is perforated, and air heating, humidifying and circulating means are provided in the space between the inner and outer walls of the chamber, so that the air is drawn from within the inner wall into the space between the inner and outer walls, brought to proper temperature and moisture, and redelivered within the inner wall. An electric thermometer and hygrometer are provided within the inner wall and automatically regulate the humidifying and heating apparatus to maintain as nearly as possible uniform conditions.

In the drawings which illustrate the invention:—Figure 1 is a vertical longitudinal section of the chamber showing the various elements of the apparatus diagrammatically. Fig. 2 is a plan view of the apparatus, the electrical equipment being omitted. Fig. 3 is a rear elevation of the device, the back outer wall being removed.

Referring more particularly to the drawings, 5 designates the outer and 6 the inner wall inclosing a chamber 7 for the storage of cigars. At the front of the chamber, in which is provided a door 8, and at the sides, the inner and outer walls may coincide, but it is essential that at back, top and bottom, a passage 9 be left for the circulation of air. At top and bottom, the inner wall 6 is provided with apertures 10 through which the air passes from the circulation passages into the chamber.

At the rear of the chamber, a heating coil 11, air circulating fan 12 and humidifying tank 13 are provided in the passage 9, as clearly shown in the drawings. The heating coil is connected to a heater 14 provided with a feed tank 15 for supplying water and maintaining pressure for circulation. The fan 12 is operated preferably by electric current drawn from the mains 16. The humidifying tank 13 contains an electric heating element 17 operated by current drawn from one of the mains 16 through wire 18 and returned to the opposite main through wire 19.

Within the chamber 7, an electric thermometer or thermostat 20 and an electric hygrometer 21 are provided, each having a fixed and a moving contact. The thermometer and hygrometer are electrified by current from a battery 22, and according as they make or break the battery circuits operate relay 23 and 24 respectively. The relay 23 is arranged to open and close the circuit of the heater 17, and the relay 24 is arranged to open and close the circuit of an electrically operated valve 25 located between the heater 14 and coil 11. The fan 12 is operated by current flowing from and to the mains through wires 26. Current flows from the battery through the wire 27 to both thermometer and hygrometer, and from the thermometer through wire 28 to the relay 23, and from the hygrometer through wire 29 to the relay 24, and from the relays back to the battery through wire 30. Current flows from the main 16 through wires 18 and $18^a$ to the heater 17 and valve 25, and returns through the armatures of the relays and wires 31 and $31^a$.

The operation of the device is extremely simple. If the humidity rises above the set limit of variation, the instrument 21 makes contact, which energizes the magnet of the relay to draw up its armature, and thus break the circuit of the heater 17. When the humidity drops below a certain point, the battery circuit through the relay is broken and the relay armature drops, closing the heater circuit. If the temperature rises beyond the set limit of variation, the battery circuit through the relay 23 is made and the armature is drawn up, making the circuit of the valve 25, which closes and cuts off the supply of heat to the coil 11. When the temperature drops sufficiently, the circuit through the relay is broken by the thermostat, and when the relay releases its armature, the valve circuit is opened and the

valve opens, admitting heat to the coil. The fan operates continuously, forcing the warm humid air up and allowing it to enter at the top of the chamber 7, and work downwardly through the dryers, escaping at the bottom into the passage 8 to be again drawn up by the fan through the coil 11 and reheated and redehumidified.

While the invention has been shown in its simplest form, it is obvious that a number of changes may be made in the apparatus as required to meet special conditions. If electricity or fluid fuel are used for the heater 14, the valve 28 will be arranged to control the supply of the heating agent.

Having thus described my invention, what I claim is:—

1. A device of the character described, comprising a double walled chamber having the inner wall thereof formed perforate at opposite sides, an air heating coil, a water tank, and an air circulating fan located between the inner and outer walls, means for heating and circulating fluid through said coil, a heating apparatus located in the tank, a thermometer and a hygrometer located within the chamber, electrically actuated means controlled by said hygrometer governing the circulation of the heating fluid through said coil, and electrically actuated means controlled by the hygrometer governing the operation of the heater in said tank.

2. A device of the character described, comprising a double walled chamber having opposite inner walls thereof formed perforate, a water tank, an air circulating fan and a radiator located between the inner and outer walls, a fluid heating and circulating apparatus connected to said radiator, an electric water heating means within the tank, a thermometer and a hygrometer located within the chamber, means for controlling the temperature and supply of fluid through said radiator, a source of electric energy for said heater, said fan and said controlling means, a battery, a relay in circuit with the battery and thermometer arranged to govern the connection of said heating fluid controlling means with the source of energy, and a second relay in circuit with the battery and hygrometer arranged to govern the connection of said electric water heater with the source of energy.

In witness whereof, I have hereunto set my hand in the presence of two witnesses.

GEORGE E. GOLDSTEIN.

Witnesses:
S. R. W. Allen,
G. M. Morehland.

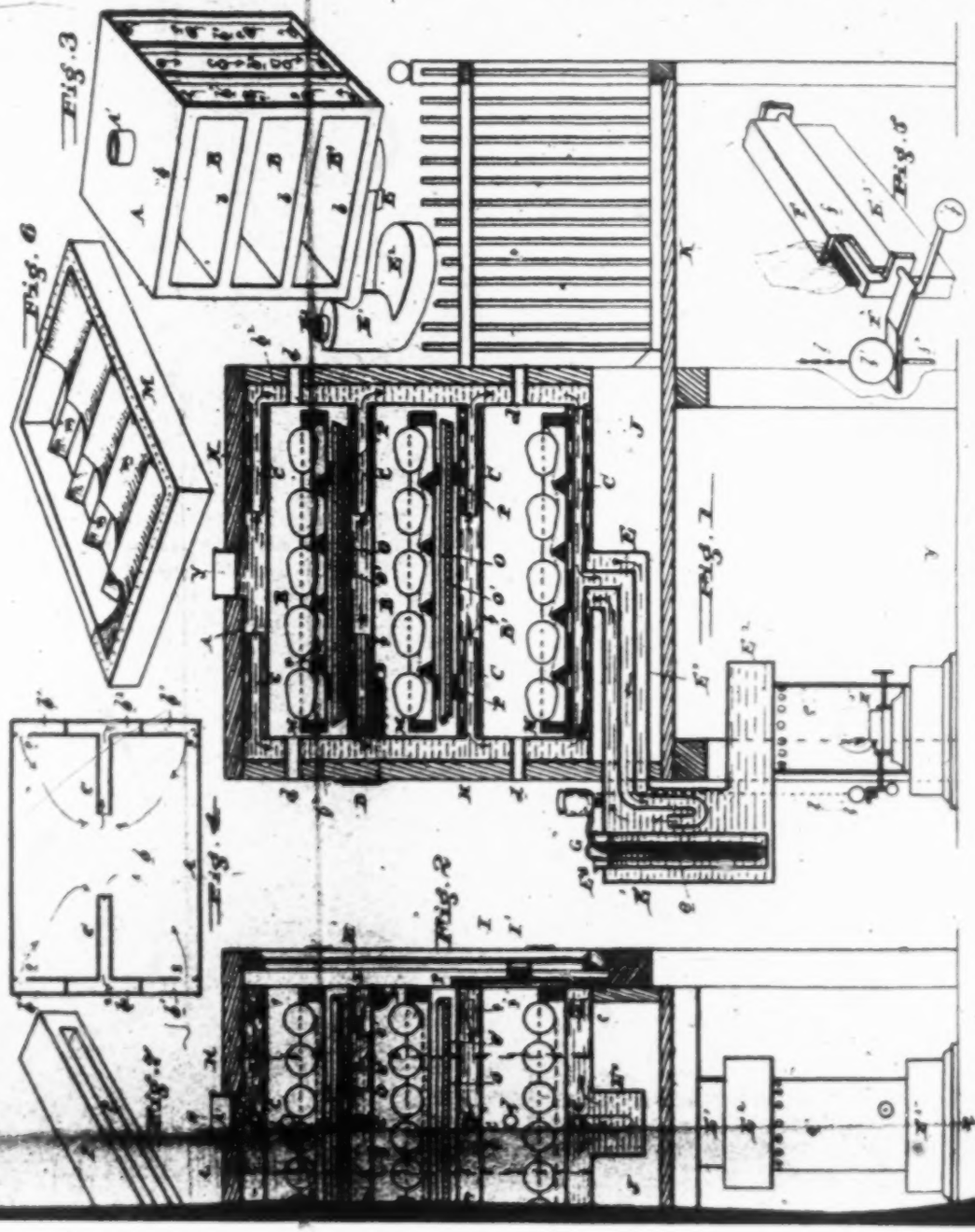
958

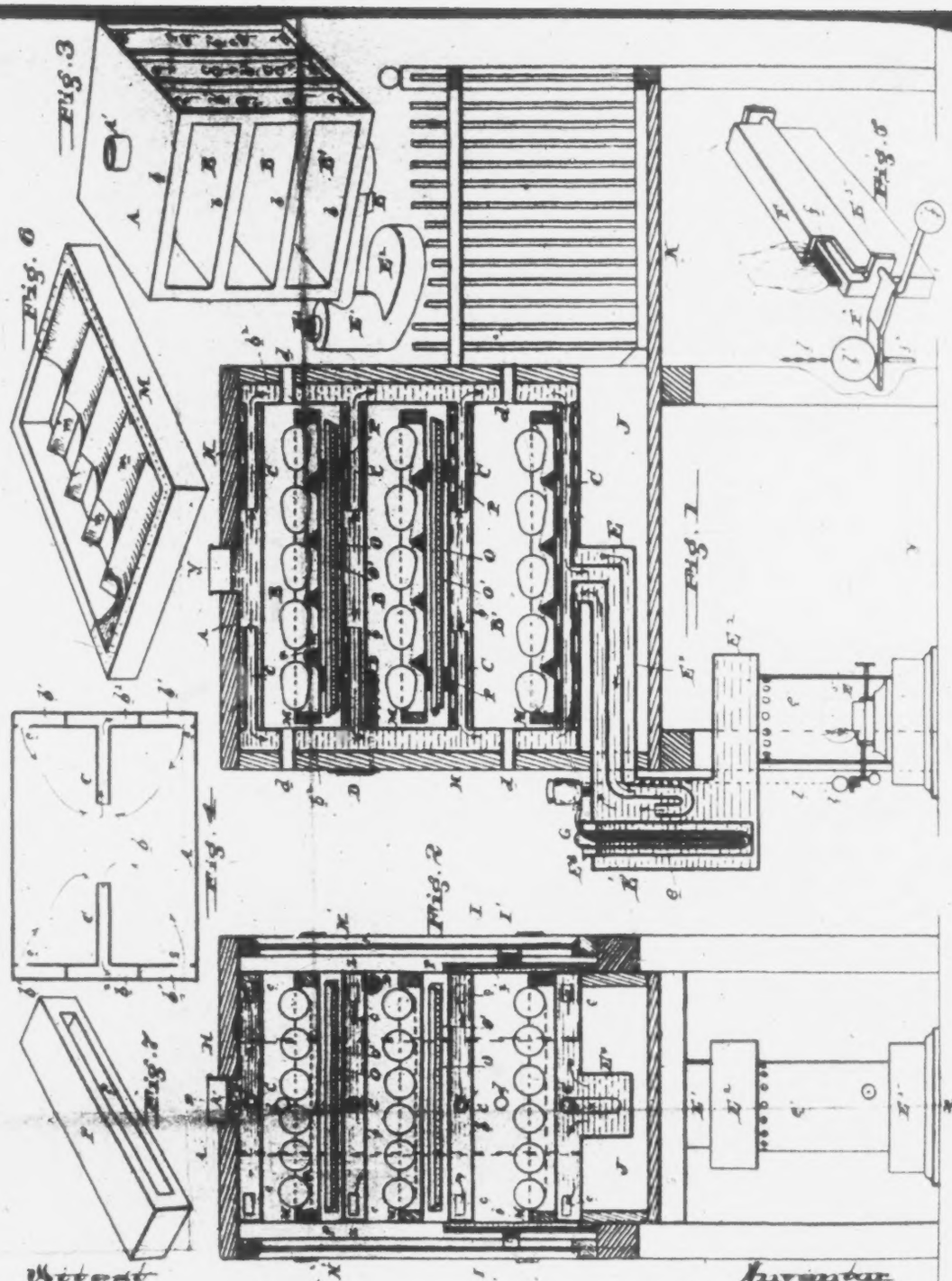
(No Model.) 2 Sheets—Sheet 1.

# J. K. MESCHTER.

## INCUBATOR.

No. 347,946. Patented Aug. 24, 1886.






Witnesses
G. E. Hummel.
Peter Stiller

Inventor
Jacob K. Meschter
By his atty

959

(No Model.) 2 Sheets—Sheet 2.

# J. K. MESCHTER.

## INCUBATOR.

No. 347,946. Patented Aug. 24, 1886.

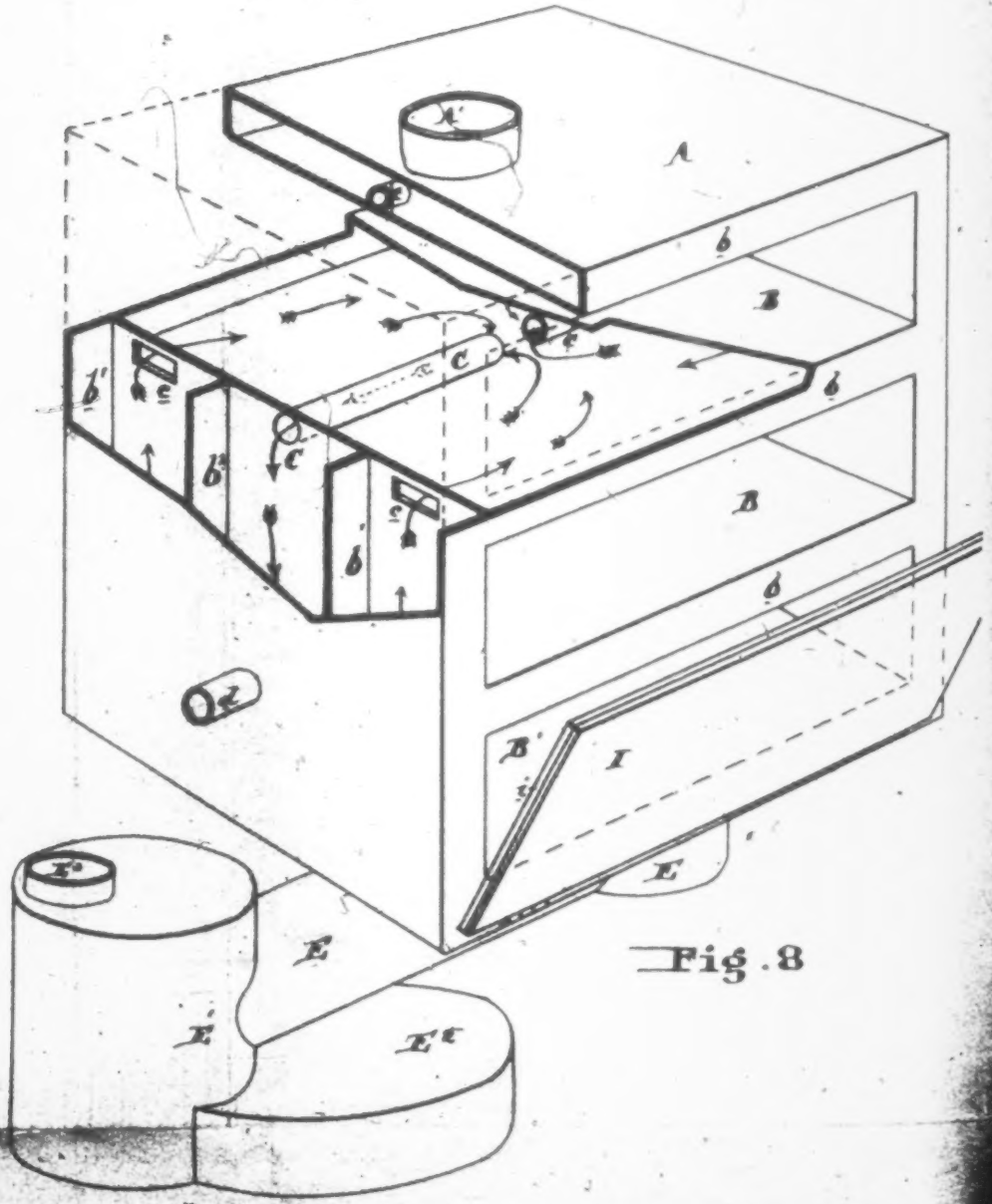



Fig. 8

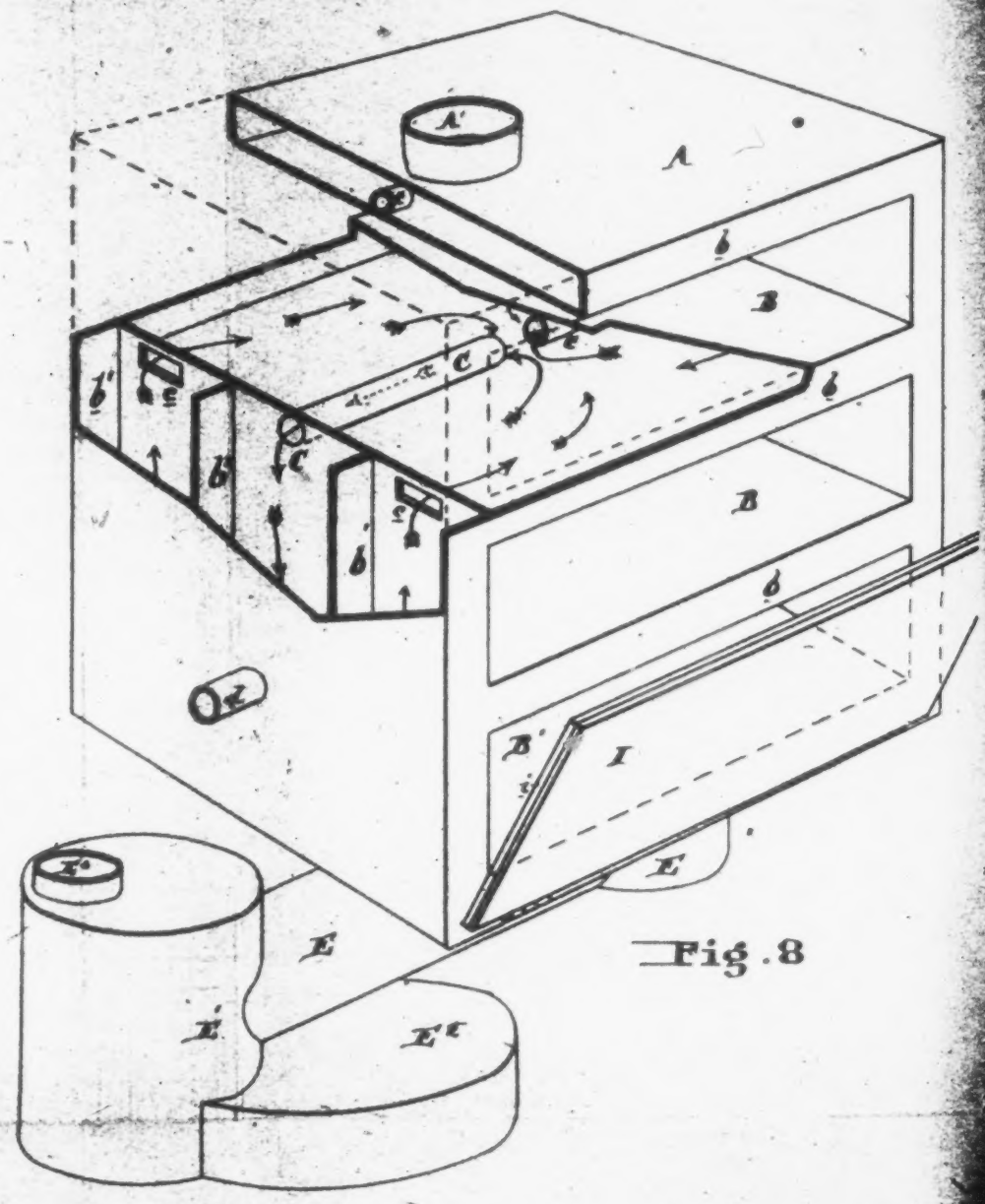



Fig. 8

Attest
J. L. Maguire
E. M. Dreckmeed

Inventor
Jacob. K. Meschler
By his atty.
[illegible]

# UNITED STATES PATENT OFFICE.

JACOB K. MESCHTER, OF PHILADELPHIA, PENNSYLVANIA.

## INCUBATOR.

SPECIFICATION forming part of Letters Patent No. 347,946, dated August 24, 1886.

Application filed August 25, 1884. Serial No. 141,362. (No model.) Patented in England June 23, 1885, No. 7,653, and in France June 23, 1885, No. 169,730.

*To all whom it may concern:*

Be it known that I, JACOB K. MESCHTER, of the city and county of Philadelphia, and State of Pennsylvania, have invented new and useful Improvements in Incubators, of which the following is a specification.

My invention has reference to incubators; and it consists in certain improvements fully set forth in the following specification and shown in the accompanying drawings, which form part thereof.

This invention has been patented to me in Great Britain on June 23, 1885, and numbered 7,653, and in France on June 23, 1885, and numbered 169,730.

The object of my invention is to provide an incubator embodying all the constructions necessary for the most perfect hatching of the eggs, to the end that there shall be as few failures and breakages as possible.

This application is upon the construction of the incubator proper, and does not embody the means of regulating the temperature of the heating-water, as that forms subject-matter of another pending application, filed February 28, 1884, Serial No. 122,286, and allowed November 29, 1884.

In the drawings, Figure 1 is a sectional elevation of my improved incubator on line *x x*, Fig. 2. Fig. 2 is a similar view on line *y y*, Fig. 1. Fig. 3 is a perspective view of the hot-water circulating-boiler with one end removed to show how the water-currents are produced. Fig. 4 is a sectional plan view of same on line *z z*, Fig. 2. Fig. 5 is a perspective view of the lamp-burner and the regulating-valve. Fig. 6 is a perspective view of one of the supporting-trays for the eggs, with part of the flexible [illegible] covering cut away; and Fig. 7 is a perspective view of one of the wooden supports [illegible] the moistening-trays, which are also adapted [illegible] support the egg-trays over said moistening- [illegible] is a perspective view of the

*b'*, from the former of which apertures *c* open into the interior of the horizontal floors, and from the latter of which tubes C extend into the space of said horizontal floors, as shown in Figs. 4 and 8.

E is a tube opening into the bottom floor, *b*, from below and connects with the heater E' and boiler E². The two pipes C in the space of the lower floor are united and terminate in a pipe, E', which passes through pipe E, and has an upwardly-turned nozzle, *e*, in the heater E'. The water is placed in the above specified apparatus by a pipe, A'.

E³ is a lamp, preferably inclosed with a sheet-metal chimney, *e'*, and is arranged under the boiler E², and heats the circulating-water, causing a circulation, as indicated by arrows, the upwardly-turned nozzle *e* facilitating said circulation. This hot-water-circulating apparatus is inclosed within a wooden case or covering, H, provided with one or more doors, H', preferably of glass, and said case forms on the bottom a chamber, J, the ceiling of which is the bottom of circulator A, whereby said chamber is kept warm. One end of said chamber opens into the brooding-yard K, which may be of any desired size and shape, and is preferably covered with earth.

The two upper chambers, B B, of the circulator proper are open on each side, and may have ventilating-tubes *d* opening into the atmosphere to allow of a proper circulation of air; but the lower chamber, B', is closed on each side by hinged doors I, having their faces *i* covered with felt, and kept closed by springs I', which are pressed upon by doors H'. Any other suitable fastening may be used, if desired. While this lower compartment is comparatively tight, it may also be provided with ventilating-tubes *d*, to carry off impure air.

D is a thermometer to indicate the temperature of the air in chamber B.

The heater-lamp E³ is provided with a cut-

JACOB K. MESCHTER, OF PHILADELPHIA, PENNSYLVANIA.

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A is the hot-water circulator, and consists of hollow partitions *b*, which form the chambers B B and B'. The side walls are supported from the horizontal walls or floors, and are further divided vertically into spaces *b' b'* and *b²*, from the former of which apertures *c* open into the interior of the horizontal floors, and from the latter of which tubes C extend into the space of said horizontal floors, as shown in Figs. 4 and 8.

E is a tube opening into the bottom floor, *b*, from below and connects with the heater E' and boiler E². The two pipes C in the space of the lower floor are united and terminate in a pipe, E', which passes through pipe E, and has an upwardly-turned nozzle, *e*, in the heater E'. The water is placed in the above specified apparatus by a pipe, A'.

E² is a lamp, preferably inclosed with a sheet-metal chimney, *e'*, and is arranged under the boiler E², and heats the circulating-water, causing a circulation, as indicated by arrows, the upwardly-turned nozzle *e* facilitating said circulation. This hot-water circulating apparatus is inclosed within a wooden case or covering, H, provided with one or more doors, H', preferably of glass, and said case forms on the bottom a chamber, J, the ceiling of which is the bottom of circulator A, whereby said chamber is kept warm. One end of said chamber opens into the brooding-yard K, which may be of any desired size and shape, and is preferably covered with earth.

The two upper chambers, B B, of the circulator proper are open on each side, and may have ventilating-tubes *d* opening into the atmosphere to allow of a proper circulation of air; but the lower chamber, B', is closed on each side by hinged doors I, having their faces *i* covered with felt, and kept closed by springs I', which are pressed upon by doors H'. Any other suitable fastening may be used, if desired. While this lower compartment is comparatively tight, it may also be provided with ventilating-tubes *d*, to carry off impure air.

D is a thermometer to indicate the temperature of the air in chamber B.

The heater-lamp E² is provided with a cut-off valve, F, hinged at F', and having a notch, *f*, so that when closed it still leaves a small part of the wide wick *e²* exposed, as shown in Fig. 5. This valve is normally kept thrown back, but may be closed by hand or automatically by apparatus controlled by the temperature

of the water, one form of which apparatus is fully set forth in another application, hereinbefore referred to. This cut-off valve may be modified in various ways—for instance, it may be made to slide.

The trays for the eggs consists of frames M, having cross-slats *m'*, and covered with coarse or open canvas *m*, or other soft material, which hangs as shown in Fig. 6. The eggs N are laid upon canvas *m*, between the slats *m'*, as shown in Fig. 1.

O are the evaporating-pans, and carry the pads O', of asbestus or other absorbent material, and are supported within the chambers B by wooden supports P, having slots *p*, through which the pans or trays are placed, so that they shall not interfere with the radiation of heat from the floors *b*.

Heretofore it has been the custom to use moist earth to impart the requisite moisture to the atmosphere in the chamber B; but there was always liability of getting too much water or not enough, and the use of earth was dirty and objectionable. By my method of using an absorbent pad of a given size, when saturated it will always take up the same quantity of moisture, neither more nor less than required.

In the lower chamber, B', the frames M rest upon the floor *b*; but in the chambers B the frames rest upon the supports P, above the water-trays O.

The eggs are first placed in the chamber B', where they must be kept dry, no other moisture than that contained in the egg itself being required, and, in fact, if more moisture be added it would destroy the hatching quality of the eggs. After being treated in chamber B' for some time they are then placed above the trays O in chambers B, where additional moisture is required, and when hatched the chickens are placed in chamber J and allowed to run free in the yard K.

In practice there are three sets of eggs in the incubator all the time, and it is evident that by varying the capacity of the incubator more than three sets of eggs could be simultaneously treated.

By the use of the soft bottoms to the egg-trays I am enabled to place two trays together, and by turning them over transfer the eggs from one tray to the other and at the same time turn them, a feature very necessary to

[illegible] may be used—as oil, [illegible]—and in place of an oil-lamp a gas-burner may be used to heat the circulating [illegible] and the valve E

A, having chambers B and B', and consisting of hollow floors and walls *b*, vertical passage-ways *b' b²* at each end and connecting with said floors, the passage-ways *b'* by apertures *c*, and passage-ways *b²* by pipe C, and means to heat the water to cause a circulation of the hot water up through passage-ways *b'* and back through the floors, pipe C, and passage-ways *b²*, substantially as and for the purpose specified.

2. In an incubator, the hot-water circulator A, having chambers B and B', and consisting of hollow floors and walls *b*, vertical passage-ways *b' b²* at each end connecting with said floors, the passage-ways *b'* by apertures *c*, and passage-ways *b²* by pipes C, pipe E connecting with the bottom of passage-ways *b'*, pipe E', having nozzle *e*, and connecting with the bottom of passage-ways *b²*, and means to heat the water to cause a circulation of the hot water-up through passage ways *b'* and back through the floors, pipes C, and passage-ways *b²*, substantially as and for the purpose specified.

3. The heated hatching-chambers B B, exposed to the atmosphere, the heated hatching-chamber B', closed to the atmosphere, doors I, to close the entrances of said chamber B' alone, egg-trays in each of said chambers, and moistening-pads located under the trays in each of the chambers B, but not in the closed chamber B', the inclosing case H, loosely covering all of said chambers to prevent quick drafts of air, and tubes *d*, connecting one of the open chambers B and the closed chamber B' with the atmosphere, substantially as and for the purpose specified.

4. A frame to support the eggs in an incubator, consisting of a rectangular frame, M, having cross-bars *m'*, made triangular in cross-section, and a soft flexible bottom, *m*, supported over said bars, whereby the eggs are held in rows and each row is separated from the next, substantially as and for the purpose specified.

5. The combination of the pad-tray O, the porous water-holding pad O' therein, the slotted frames P, through the slots of which the tray is placed, and egg-frames M, having soft bottoms and supported upon said frames P, above the pad O', substantially as and for the purpose specified.

6. The hot-water circulator having chambers B B B', in combination with doors I, having springs I' and pads to close the chamber B', case H, and doors H' thereto, which when closed press upon the springs I' and cause the doors I to tightly close the chamber

O are the evaporating-pans, and carry the pads O', of asbestus or other absorbent material, and are supported within the chambers B by wooden supports P, having slots p, through which the pans or trays are placed, so that they shall not interfere with the radiation of heat from the floors *b*.

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In practice there are three sets of eggs in the incubator all the time, and it is evident that by varying the capacity of the incubator more than three sets of eggs could be simultaneously treated.

By the use of the soft bottoms to the egg-trays I am enabled to place two trays together, and by turning them over transfer the eggs from one tray to the other and at the same time turn them, a feature very necessary to the proper hatching of chicken eggs.

Instead of water any other heating-fluid may be used—as oil, glycerine, &c.—and in place of an oil-lamp a gas-burner may be used to heat the circulating-boiler, and the valve F may control the flow of gas.

While I prefer the construction shown, it may be modified in various ways without departing from my invention.

Having now described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. In an incubator, the hot-water circulator [illegible] of hollow floors and walls *b*, vertical passage-ways *b'* *b²* at each end connecting with said floors, the passage-ways *b'* by apertures *c*, and passage-ways *b²* by pipes C, pipe E connecting with the bottom of passage-ways *b'*, pipe E', having nozzle *e*, and connecting with the bottom of passage-ways *b²*, and means to heat the water to cause a circulation of the hot water up through passage-ways *b'* and back through the floors, pipes C, and passage-ways *b²*, substantially as and for the purpose specified.

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In testimony of which invention I hereunto set my hand.

JACOB K. MESCHTER.

Witnesses:
R. M. HUNTER,
WILLIAM C. MAYNE.

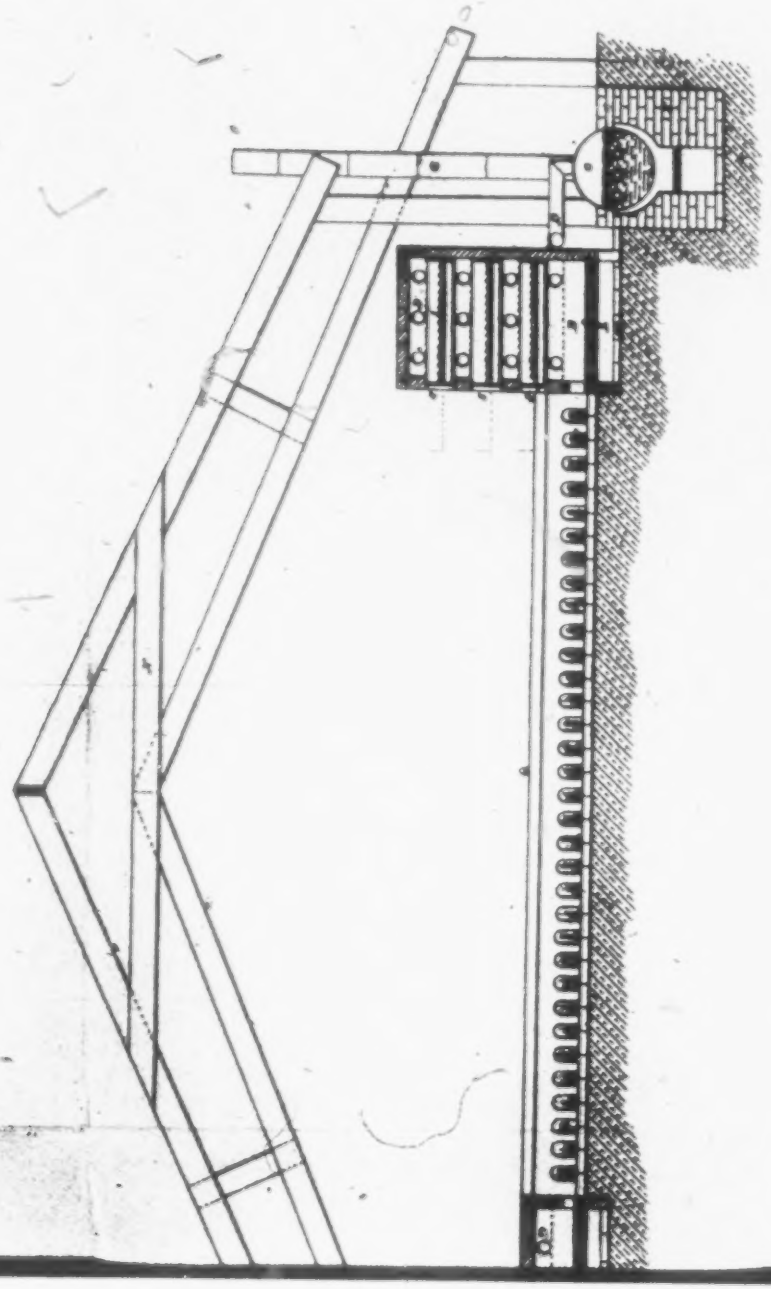
962

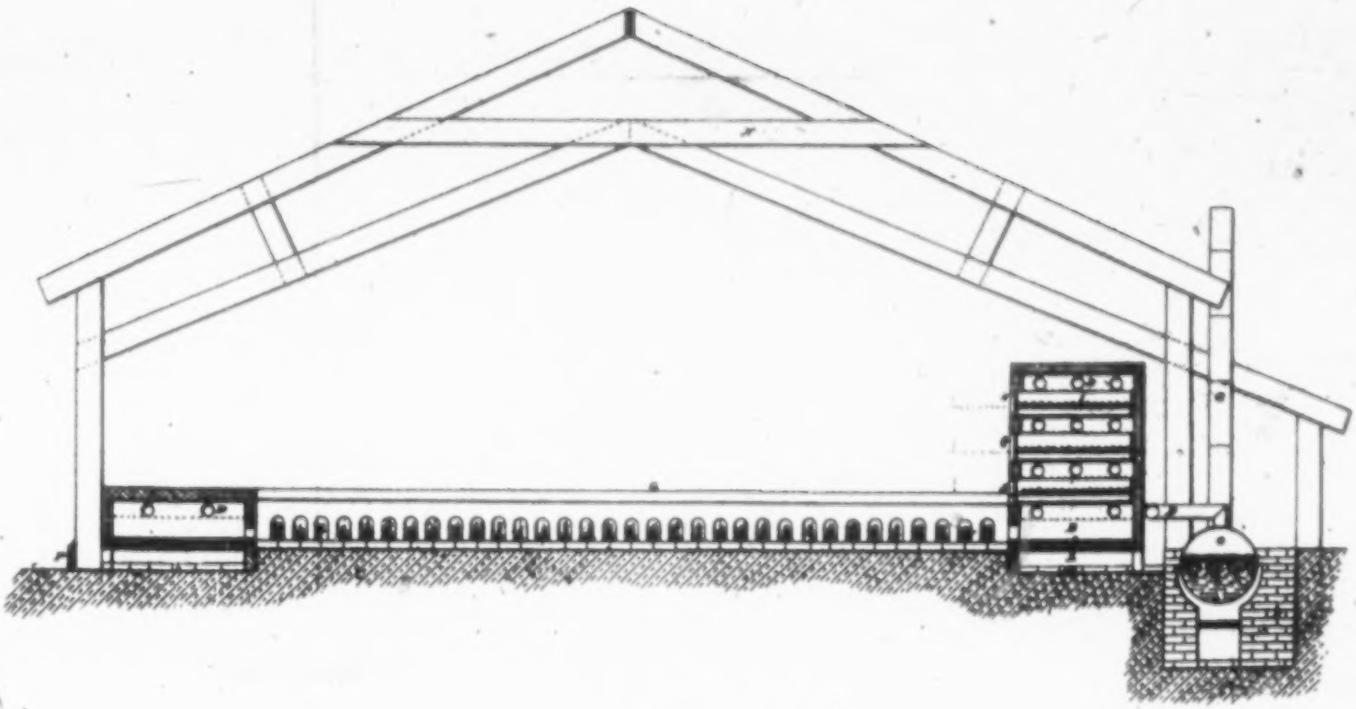
4 Sheets—Sheet 1.

# N. E. GUERIN.

## ARTIFICIAL METHOD OF REARING CHICKENS.

No. 3,019. Patented Mar. 30, 1843.





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4 Sheets—Sheet 3.

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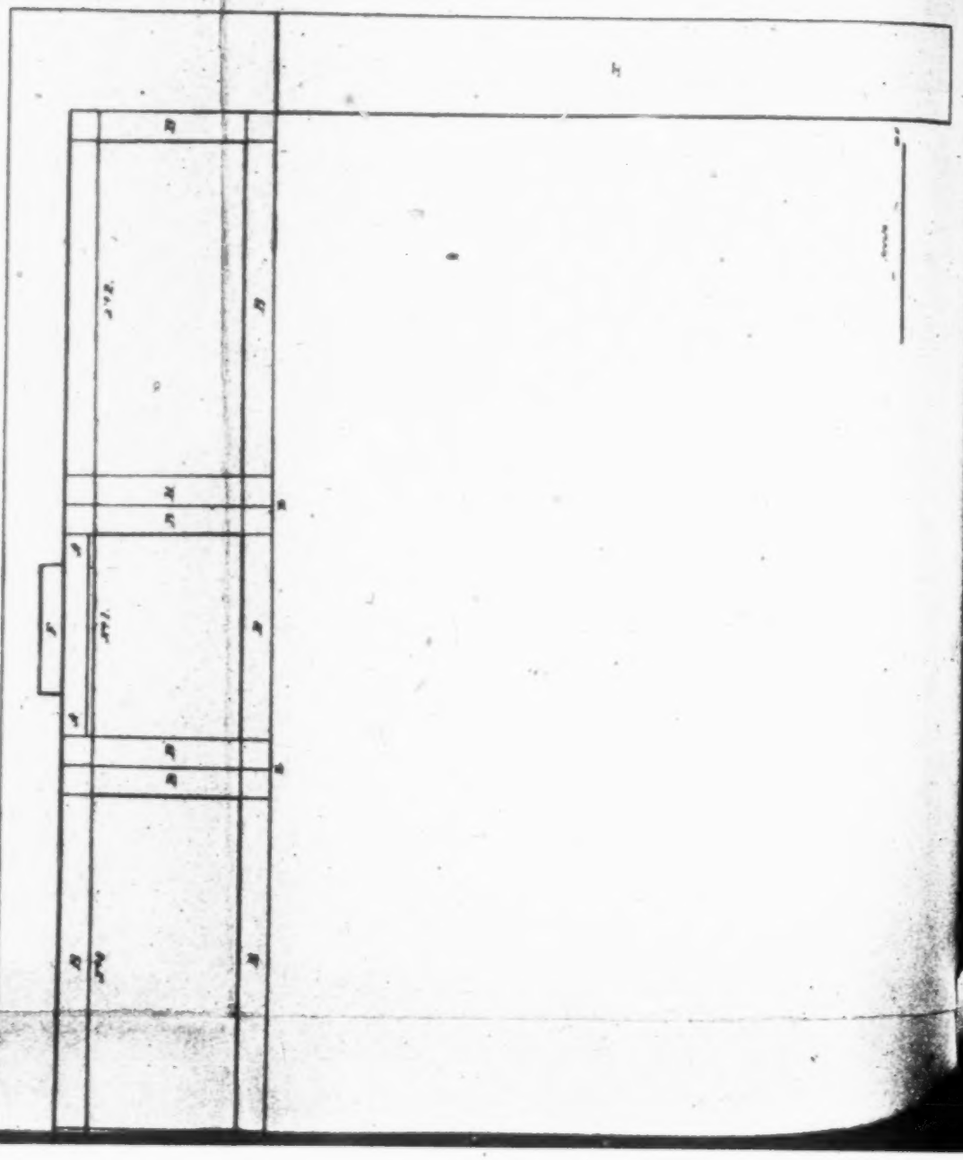

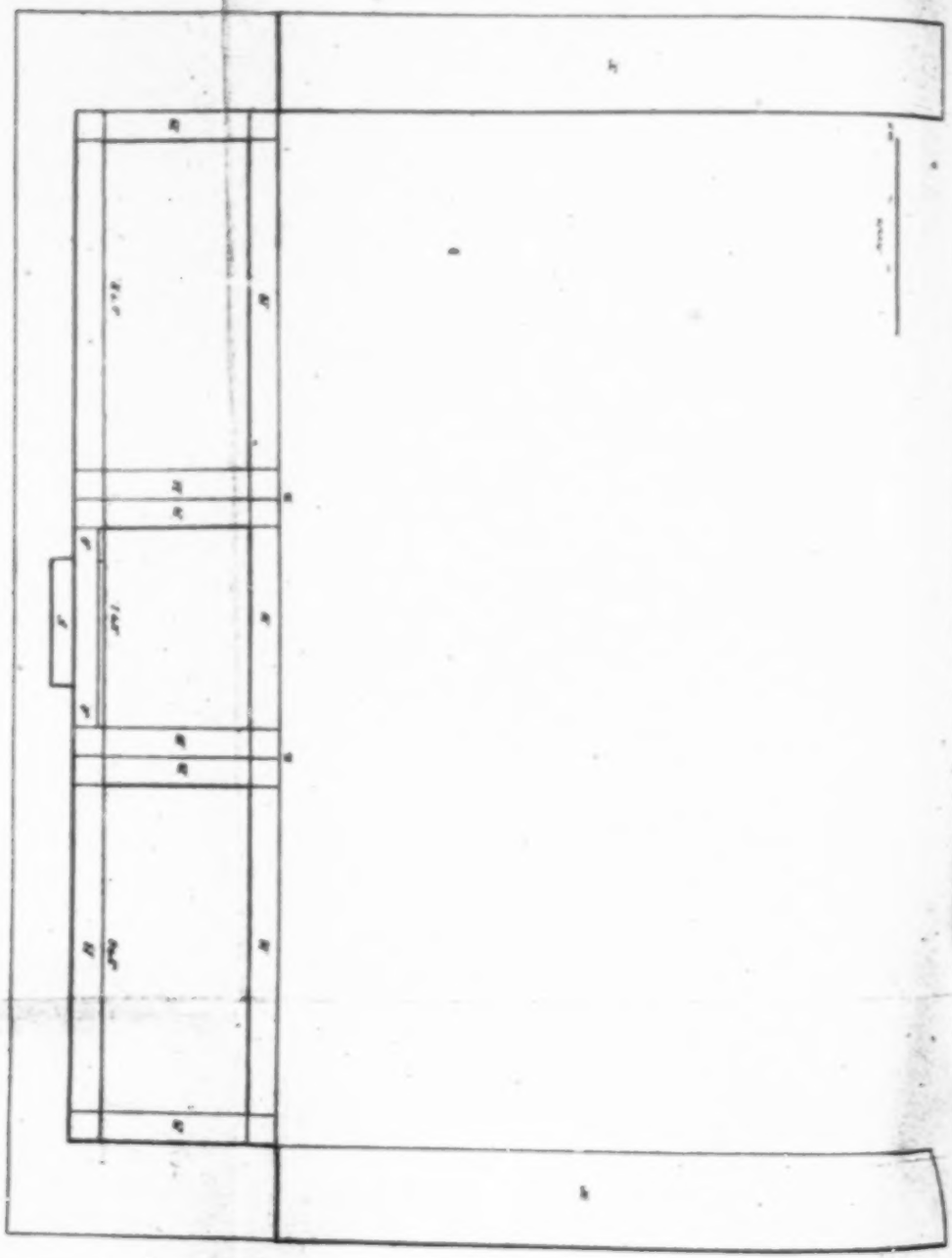

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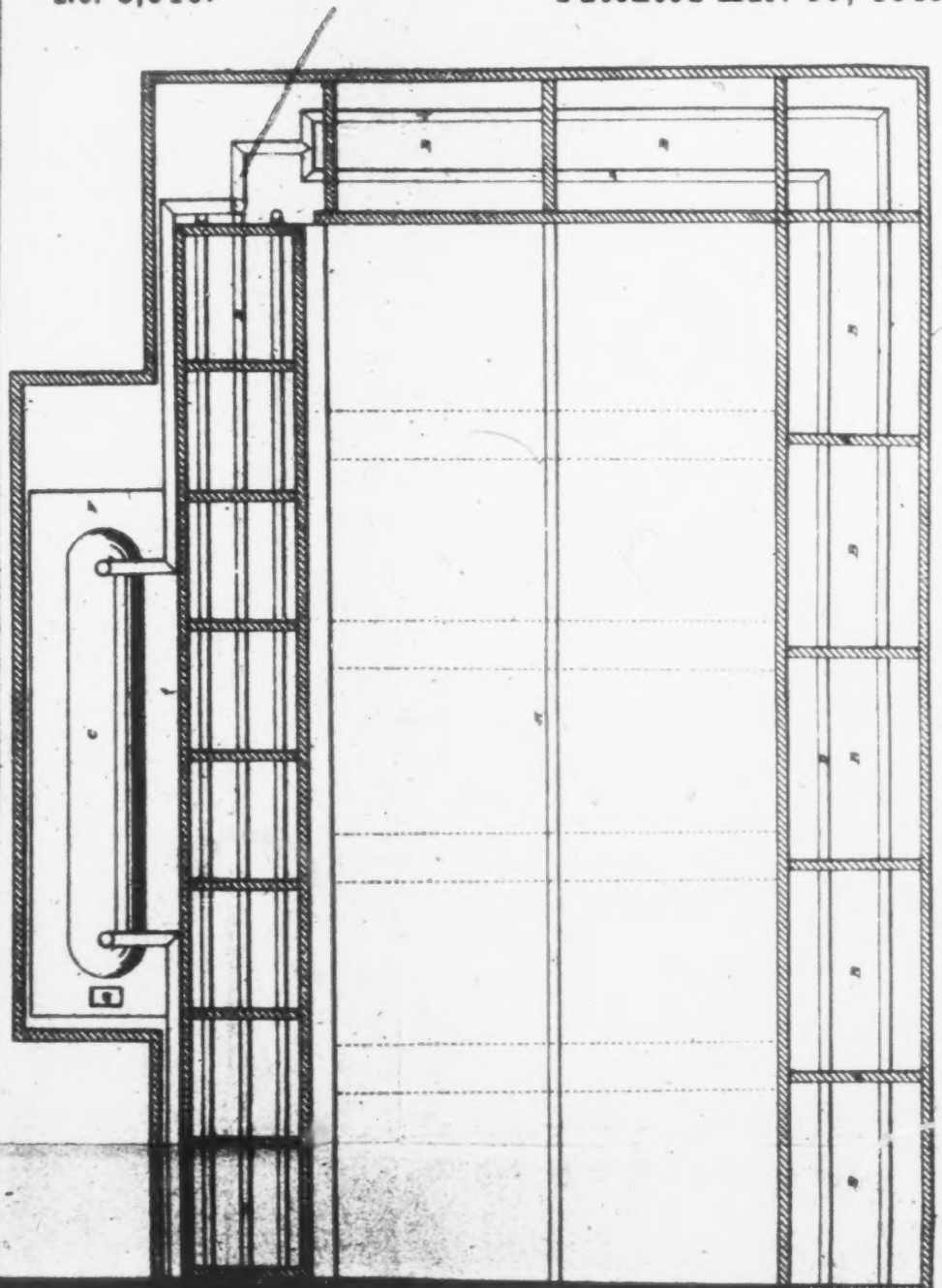

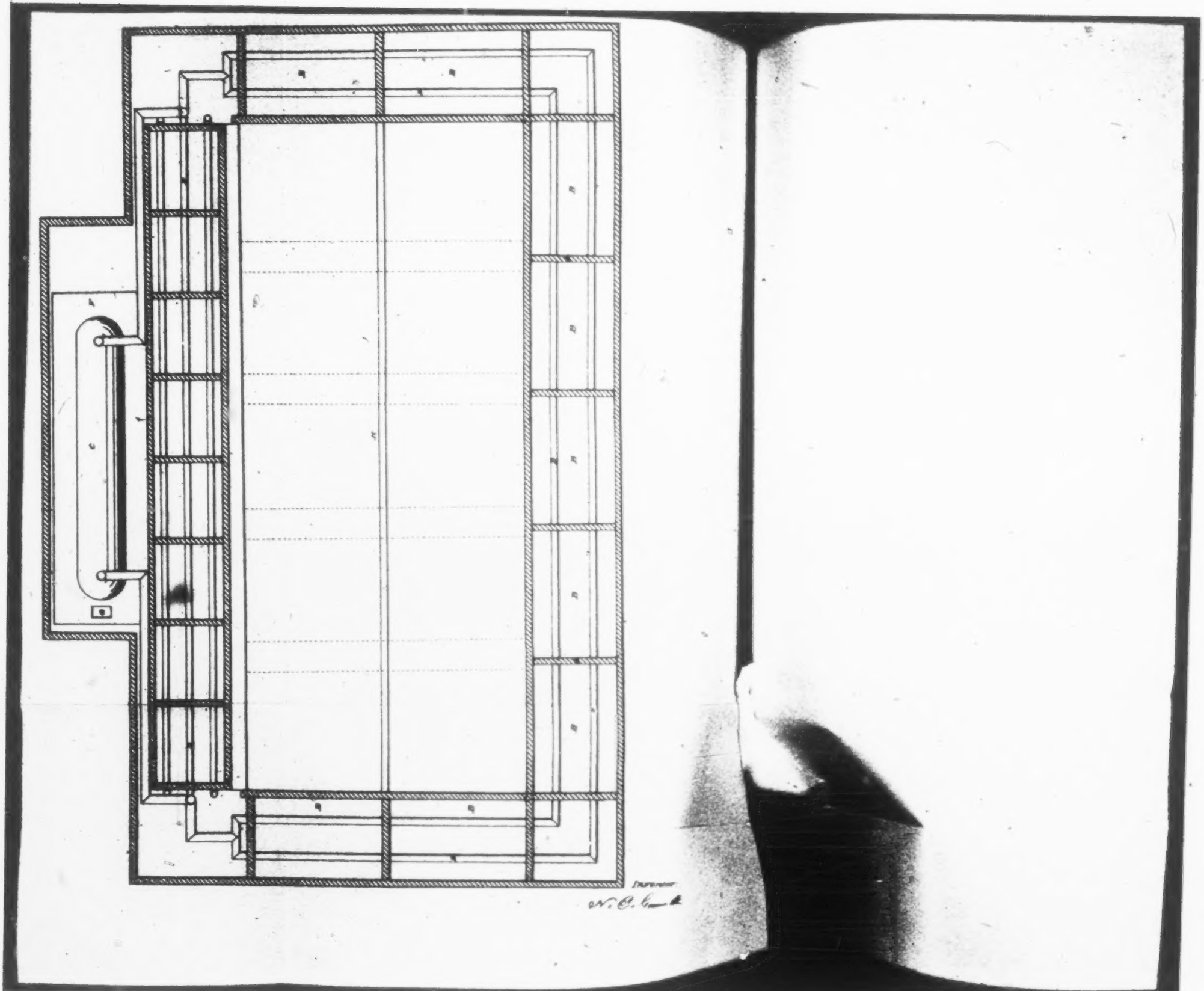

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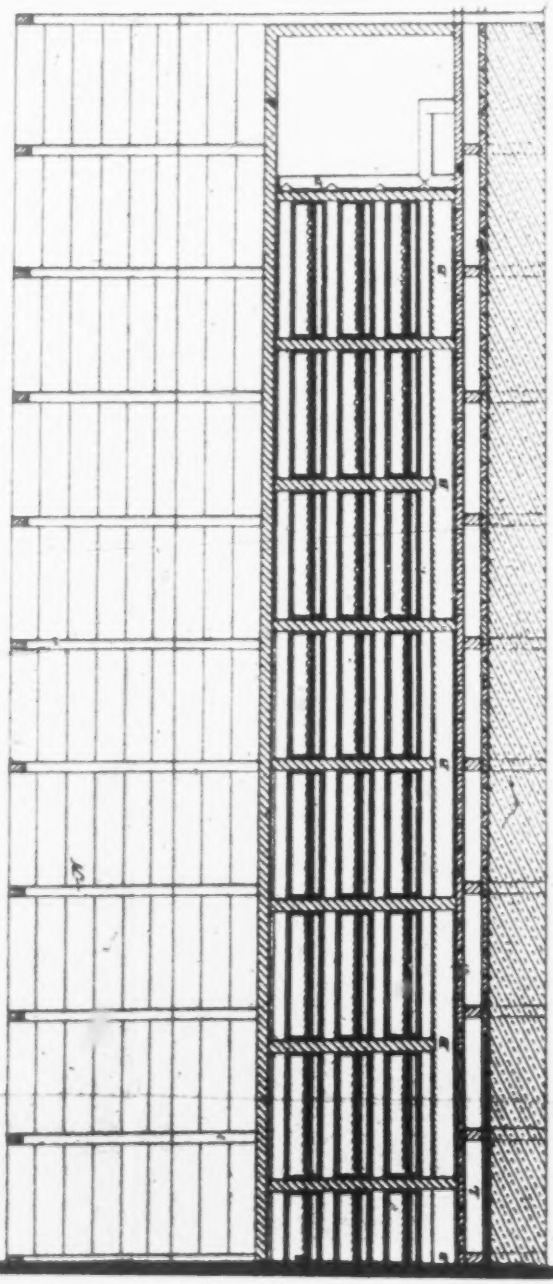

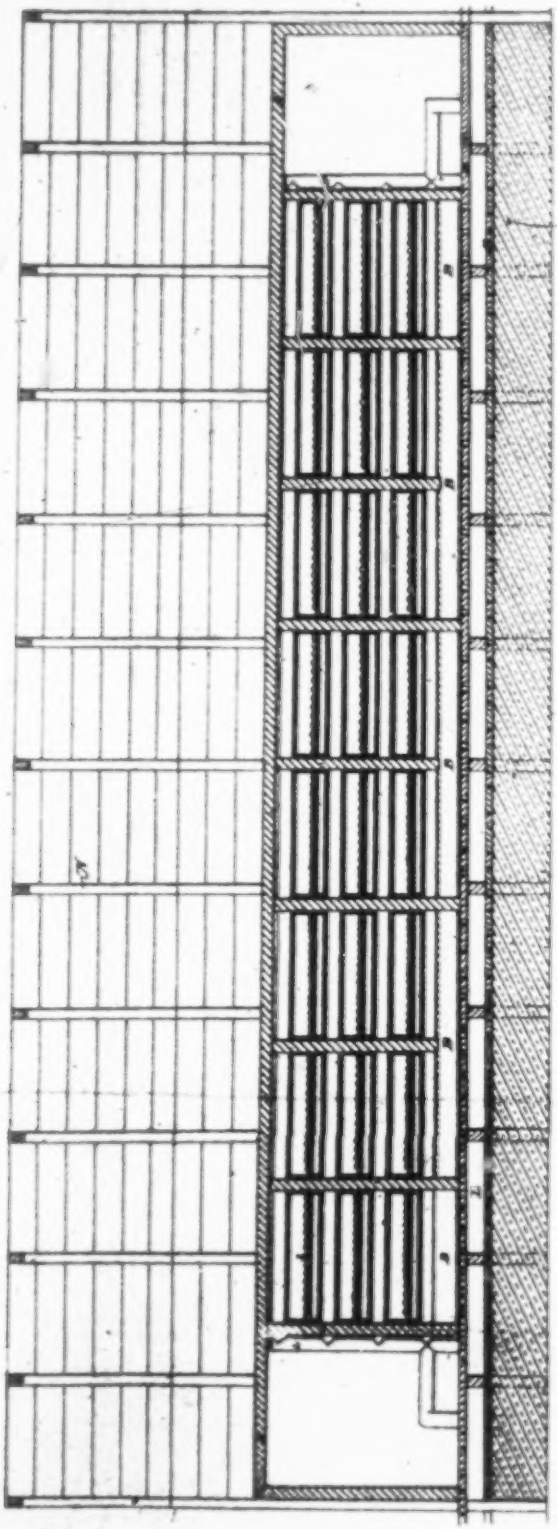

Inventor

N. C. [illegible]

# UNITED STATES PATENT OFFICE.

NAPOLEON E. GUERIN, OF NEW YORK, N. Y.

## HATCHING CHICKENS.

Specification of Letters Patent No. 3,019, dated March 20, 1843.

*To all whom it may concern:*

Be it known that I, NAPOLEON E. GUERIN, of the city of New York, county and State of New York, have invented an Artificial Method of Rearing Chickens; and I do hereby declare that the following is a full and exact description.

The nature of my invention consists in a method of rearing the chickens, after the hatching of the eggs, in an oven as herein described.

Several attempts have been made to hatch eggs by artificial means, and to rear the chickens thus produced. The first of these operations has been successful, but all efforts to rear the chickens have been hitherto fruitless; from the circumstances that those who made the experiments considered the chicken as an animal which was endowed with the faculties of locomotion and of sight, and was also enabled to partake of food from the moment of its birth, and under this impression all that was necessary, or deemed so, was to protect the young birds from the inclemency of the weather, and they were accordingly kept in heated apartments without air. Although the chicken is a bird which is easily reared, since it is able to eat, as it were, at the moment it breaks its shell, still it must be observed that there are also certain requisites which are indispensable to its existence, namely, air and heat judiciously combined. If the attempts above alluded to had been effected by men of observation, residing in the country, they would have doubtless been more successful in their undertakings, as it is extremely probable that they would have observed the method adhered to by the farmer's wife, when by some mishap a newly hatched brood of chickens are deprived of the mother who would so faithfully have watched over them; a method it may be remarked which almost invariably succeeds, do not know why this system is pursued in preference to any other, but that they have seen their mothers follow the same method and meet with similar success. A careful observer will at once perceive in this the way in which the hen's place may be adequately supplied; we always see the feet of the chickens on the ground which keeps them in a cool state, even when guarded by its parent, while the head and upper part of the body are warmed by the heat derived from the hen's body. Whether we ascribe the means employed by the farmer's wife, to chance as to a series of observations, it would be impossible to imitate nature more effectually, since the chicken obtains thus air from below and warmth from above.

*Drawing No. 1. Ground plan of a building for the artificial hatching of seven thousand five hundred eggs (7,500) and rearing the chicken during the first month of its existence.*—A A A A, hatching oven with eight divisions, for the reception of twenty four drawers, three in each division and placed one above the other, each drawer to contain from three hundred and thirteen to three hundred and fourteen eggs (313 to 314). B B B B, nests for the chickens to sleep in; these are arranged along the whole apartment, the hatching oven being placed on the top of the nests on one side of the apartment. C the steam boiler. D D D D steam pipes for heating the oven and the upper part of the nests. E E E cross pieces to support the steam pipes. F mason work of the boiler. G, fire of the boiler. H stream of water which traverses the length of the building, this is to water the chickens and to keep them clean; it must be constantly renewed. The space between the four ranges of nests is paved with brick; and is used as a yard for the chickens.

*Drawing No. 2. Describes the length and height of the oven for hatching.*—

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*Drawing No. II. Describes the length and height of the oven for hatching.*—A sectional plan, or view of the oven according to the line O O of the ground plan, so as to admit of being seen in all its parts. B the nests under the oven. D steam pipes. There are nine of these in the oven, and they are placed as shown over each drawer; the heat does not bear directly upon the eggs; a piece of white cotton duck is placed where there is a red painted line in the plan, which absorbs the heat at first and then gives it

out equally upon each drawer. I drawer to contain the eggs; this is divided in two parts by a mat supported by a netting whereby a vacant space is left between the eggs and the bottom of the drawer. Drawing No. III gives an explanation of this. J mat placed upon the bottom of the nests. K bottom of the nests; a number of irregular holes are bored in it, to admit fresh air to the mat where the chickens are. L conduit through which air enters from the exterior. M brick pavement of the conduit above mentioned. N woodwork of the building.

*Drawing No. III. The oven for hatching viewed across, and the apartment where the chicken is kept during the first month.*—The same letters refer to the same parts as those indicated in the preceding drawings. P valve to admit external air into the conduit already mentioned, and which conveys it under all the nests. It will be noticed that the holes bored in the bottom of the nests are of irregular dimensions; the smaller ones are nearer to the valve and the larger are the most distant from it; the object is to distribute the air equally under the mat. Q front view of one of the sides of the nests. R openings or doors for the ingress and egress of the chicken; these doors are concealed by split pieces of colored cotton or worsted stuffs. This arrangement allows the chicken to pass to and fro freely as it would have done under the care of the hen, by moving her feathers to one side or the other. S front view of the drawers for hatching with openings concealed as the preceding, by slit pieces of colored stuffs on a level corresponding with that of the mat. The dotted line shows the elongation added to each drawer the first day that the chickens are hatched. The black line or mark, on a level with the vacant space left between the mat and the bottom of the drawer, shows the holes which are unstopped on the same day to admit the air. The following explains this: The chicken must not be touched the first day nor even during half the second day that it is hatched. They are to remain in their respective drawers, the elongation or lengthening of the drawers forms a gallery where the young bird may take exercise, passing between the slit colored each side of the nests must correspond to that of the drawers where the chickens were hatched.

*Drawing No. IV. General plan of the buildings.*—No. 1, room where the chickens are hatched and where they remain during the first month. The letters correspond to the preceding plan and point out the oven, the nests and the spot where the boiler is placed. No. 2, apartment where the chickens are kept during the second and third month; the nests are arranged around the whole room; they are no longer heated by the steam of the boiler but derive the necessary warmth from small furnaces placed at the four angles of the room, by means of which the water is heated for the steam to be conveyed by the conduits. This apartment is larger by half than room No. 1 and is situated to the right of room No. 1. No. 3, a similar apartment situated to the left of No. 1.

The hatching must be conducted so as to obtain a fresh brood as soon as the chickens are a month old. When they have obtained that age they are removed to the next room, in order that the newly hatched ones may occupy their place; for this purpose, sliding doors are placed Z Z and thus divide room No. 1 from Nos. 2 and 3. As soon as they are removed by this simple contrivance, the sliding door is replaced as before and the rooms are again separated. As soon as the chickens of the second hatching have remained one month in room No. 1, the sliding door is again withdrawn, but to pass them in room No. 3. The heat in the nests of No. 2 begins now to be progressively diminished and small perches are placed in the room, for many chickens at that age, prefer to roost rather than to sleep in the nests. The third set of eggs having been hatched, the chickens of No. 2 are by this time three months old, and are therefore of a proper age to be transferred to the yard with resting places; the small perches are then removed to room No. 3, where the chickens are now two months old. The chickens of the third set of eggs are now removed to the nests of those of the fourth set to No. 3, and so on during the year. Thus it will be seen that the chickens are not removed to the yard before they are three months old.

K bottom of the nests; a number of irregular holes are bored in it, to admit fresh air to the mat where the chickens are. L conduit through which air enters from the exterior. M brick pavement of the conduit above mentioned. N woodwork of the building.

*Drawing No. III. The oven for hatching viewed across, and the apartment where the chicken is kept during the first month.*—The same letters refer to the same parts as those indicated in the preceding drawings. P valve to admit external air into the conduit already mentioned, and which conveys it under all the nests. It will be noticed that the holes bored in the bottom of the nests are of irregular dimensions; the smaller ones are nearer to the valve and the larger are the most distant from it; the object is to distribute the air equally under the mat. Q front view of one of the sides of the nests. R openings or doors for the ingress and egress of the chickens; these doors are concealed by split pieces of colored cotton or worsted stuffs. This arrangement allows the chicken to pass to and fro freely as it would have done under the care of the hen, by moving her feathers to one side or the other. S front view of the drawers for hatching with openings concealed as the preceding, by slit pieces of colored stuffs on a level corresponding with that of the mat. The dotted line shows the elongation added to each drawer the first day that the chickens are hatched. The black line or mark, on a level with the vacant space left between the mat and the bottom of the drawer, shows the holes which are unstopped on the same day to admit the air. The following explains this: The chicken must not be touched the first day nor even during half the second day that it is hatched. They are to remain in their respective drawers, the elongation or lengthening of the drawers forms a gallery where the young bird may take exercise, passing between the slit colored stuffs already mentioned the air which passes through the mat affords the means of respiration to those chickens who are not disposed to take exercise. The chickens become accustomed to the particular color of the stuff; they recognise it as the color of their parent. When the period has arrived for their removal from the drawers to the apartment where the nests are, they are not at a loss which nest to select, but proceed at once to that with which they have become familiarized. This shows that the color of the preceding plan and points out the nests and the spot where the [illegible] placed. No. 2, apartment where the [illegible] ens are kept during the second and [illegible] month; the nests are arranged around the whole room; they are no longer heated by the steam of the boiler but derive the necessary warmth from small furnaces placed in the four angles of the room, by means of which the water is heated for the steam to be conveyed by the conduits. This apartment is larger by half than room No. 1 and is situated to the right of room No. 1. No. 3, a similar apartment situated to the left of No. 1.

The hatching must be conducted so as to obtain a fresh brood as soon as the chickens are a month old. When they have obtained that age they are removed to the next room, in order that the newly hatched ones may occupy their place; for this purpose, sliding doors are placed Z Z and thus divide room No. 1 from Nos. 2 and 3. As soon as they are removed by this simple contrivance, the sliding door is replaced as before and the rooms are again separated. As soon as the chickens of the second hatching have remained one month in room No. 1, the sliding door is again withdrawn, but to pass them in room No. 3. The heat in the nests of No. 2 begins now to be progressively diminished and small perches are placed in the room, for many chickens at that age, prefer to roost rather than to sleep in the nests. The third set of eggs having been hatched, the chickens of No. 2 are by this time three months old, and are therefore of a proper age to be transferred to the yard with roosting places; the small perches are then removed to room No. 3, where the chickens are now two months old. The chickens of the third set of eggs are now removed to No. 2, those of the fourth set to No. 3, and so on during the year. Thus it will be seen that the chickens are not removed to the yard before they are three months old; the heat during the third month which has been gradually diminishing and the perches to which they have become accustomed enables them to bear the change or removal to the yards where they are to remain until they are sold.

X X large roosting places, built at the two ends of the building; they are divided lengthwise in two parts and the yard is similarly partitioned off so as to contain chickens of the same age, in order that when the time of selling them arrives, it may be

y to select from any brood. Without this caution it would be impossible to make proper selection.

What I claim as my invention, and desire to secure by Letters Patent, is:

1. The mode of giving and distributing the heat derived from the steam pipes, as well upon the eggs in the hatching oven, as upon the chickens in the nests.

2. The plan of making the colors of the slit pieces of cotton or worsted stuff of the hatching drawers correspond with the sides of the nests in the apartments where similar slit pieces are used.

3. The elongation or lengthening of the drawers, and admitting of air at the moment the birds break their shells.

4. The mode of purifying the air under the nests by the admitting of vital air during the three first months of the chicken's existence and before it can live in open yards without danger.

5. The method of keeping the chickens in two apartments, one on the right and the other on the left side, of the apartment where the hatching takes place and where it may thus be continued without any interruption.

6. Finally, the drawings, the specifications and the model explain and show these new arrangements or dispositions, which have not, to my knowledge, been used or adopted in any of the countries where the artificial hatching and rearing of chickens has been attempted.

N. E. GUERIN.

In witness of—
EDW. BAYES,
LAURENCE KENNEDY.

969

(No Model.)

# N. McASLAN.

## INCUBATOR.

No. 540,107. Patented May 28, 1895.

Fig 1

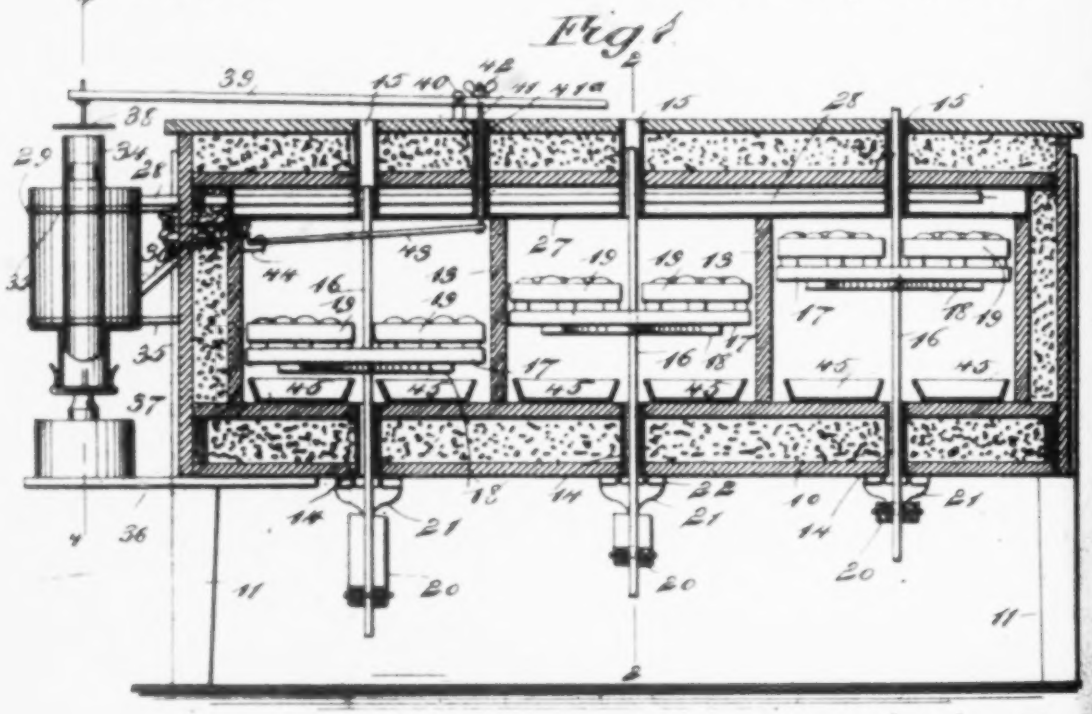


Fig 4

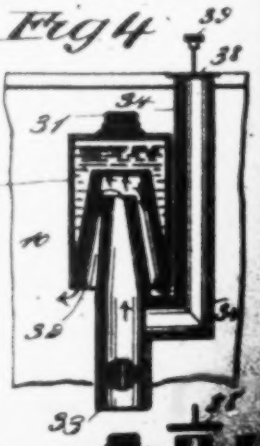


Fig 2

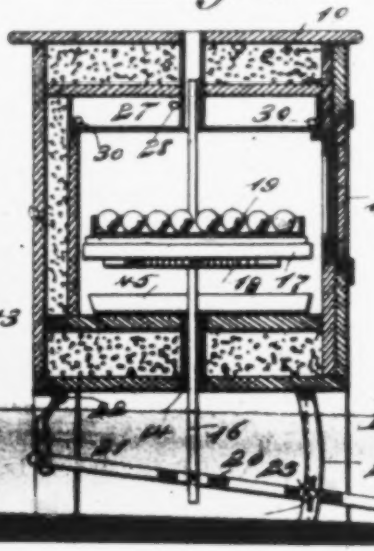


Fig 3.

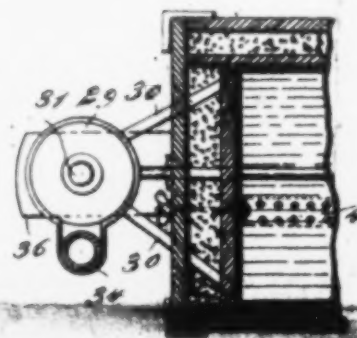


Fig 5

Fig 1.

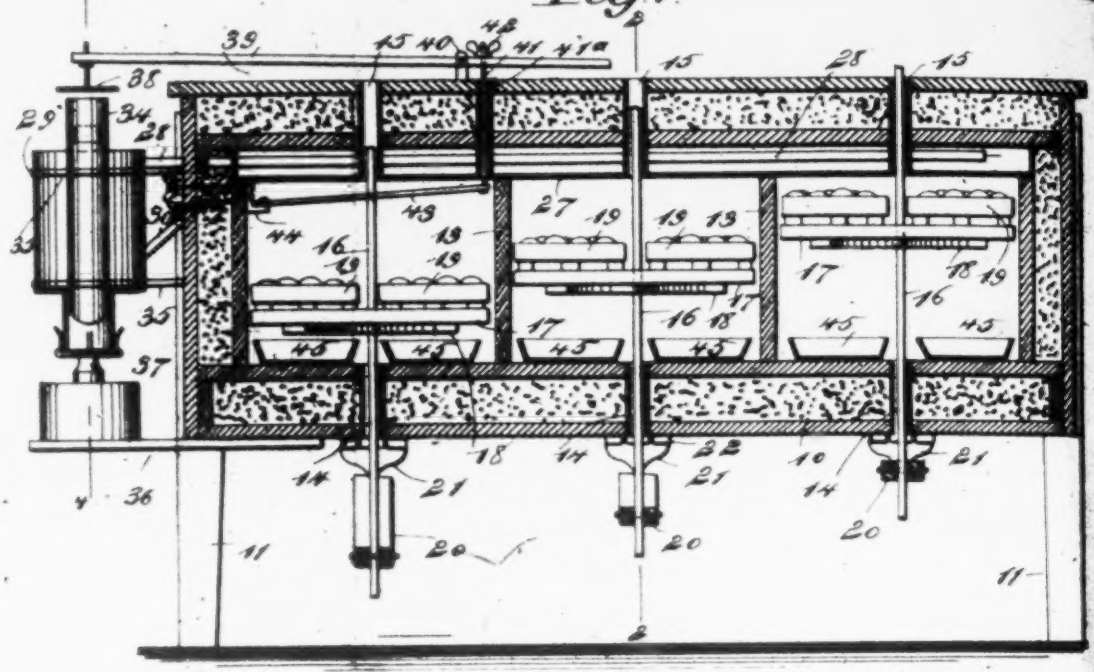


Fig 3.

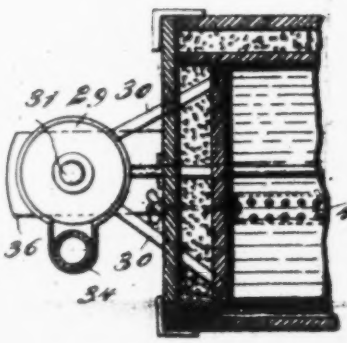


Fig 2

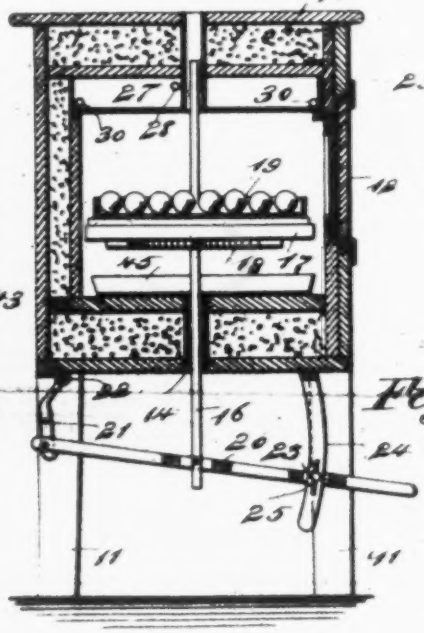


Fig 4

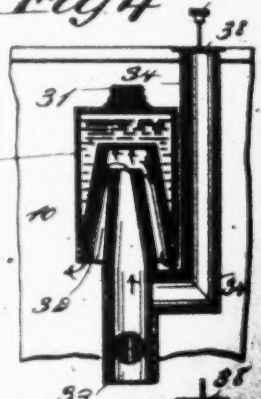
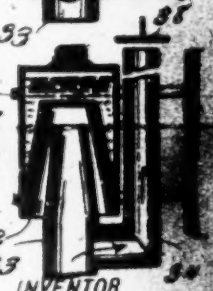


Fig 5



WITNESSES:

F. M. Ardle.

A. Lurcott

INVENTOR

N. McAstan

BY Munn & Co

ATTORNEYS.

# UNITED STATES PATENT OFFICE.

NORMAN McASLAN, OF BRIGGS, NEBRASKA.

## INCUBATOR.

SPECIFICATION forming part of Letters Patent No. 540,107, dated May 28, 1895.

Application filed March 16, 1894. Serial No. 503,881. (No model.)

*To all whom it may concern:*

Be it known that I, NORMAN MCASLAN, of Briggs, in the county of Douglas and State of Nebraska, have invented a new and Improved Incubator, of which the following is a full, clear, and exact description.

My invention relates to improvements in incubators and in the heating apparatus therefor; and the object of my invention is to produce a cheap and simple incubator which is arranged in a series of compartments adapted to contain eggs to be hatched, which has the egg trays in the several compartments arranged in such a way that the eggs may be subjected to different degrees of heat, according to the length of time which they have been in the incubator, which has a perfect means of ventilation, which has its heating apparatus constructed and arranged so that the temperature may be controlled to a nicety, which has a thermostatic device to regulate the heat, and which also can be easily regulated by hand if desired.

To these ends my invention consists of certain features of construction and combinations of parts, which will be hereinafter described and claimed.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar figures of reference indicate corresponding parts in all the views.

Figure 1 is a longitudinal section of the incubator embodying my invention, showing the egg-trays arranged at different heights therein. Fig. 2 is a vertical cross-section on the line 2 2 of Fig. 1. Fig. 3 is a detail sectional plan of one end of the incubator and of the heater. Fig. 4 is a detail vertical section through the heater and heat-controlling [illegible] on the line 4 4 of Fig. 1, showing the heat-regulating valve closed; and Fig. 5 is a [illegible] section, but with the heat-regulating [illegible].

[illegible] has a body 10, which may be compartments, though any desired number may be used.

The incubator is provided at the bottom with ventilating tubes 14, there being one for each compartment, and at the top with similar tubes 15, which open from the tops of the compartments through the top wall of the incubator, and these tubes 14 and 15, besides providing for the necessary circulation of air, also serve as guides for the rod 16 which move vertically through them and extend below the incubator bottom, each rod being pivoted to an adjusting lever 20 which projects in front of the incubator case, so that it can be conveniently grasped, and at its rear end the lever is pivoted to a link 21 which is hinged to the case bottom, as shown at 22.

The lever 20 is slotted near its front end, as shown at 23, so as to receive the quadrant 24 which is fastened to the case bottom and depends therefrom, and the lever may be held at any necessary height on the quadrant by means of a thumb screw 25 which projects through the quadrant and into the lever. Any other suitable device may be used for holding the lever at the required height.

The portion of the rod 16 which projects through the chamber of the incubator is provided with a platform 17 which is braced on the under side, as shown at 18, and is adapted to support the removable egg trays 19.

The heating device is in the top of the incubator, and it will be seen that by means of the lever mechanism just described, the platforms may be adjusted at any desired height, and thus made to subject the eggs to the required heat. By having the several compartments and the adjusting devices for each of them, eggs may be introduced to the incubator at different times.

The incubator has, in the top, a heating tank 27 adapted to contain hot water or steam, this being introduced to the tank through a pipe 28 which extends longitudinally into the

NORMAN MCASLAN, OF BRIGGS, NEBRASKA.

# INCUBATOR.

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The incubator has a body 10, which may be of any approved construction, having the customary double walls and being preferably mounted on legs 11.

The incubator has on its front side the customary double doors 12 and it is divided by the transverse partitions 13 into a series of compartments adapted to contain the eggs to be hatched, the drawings showing three such compartments, though any desired number may be used.

The incubator is provided at the bottom with ventilating tubes 14, there being one for each compartment, and at the top with similar tubes 15, which open from the tops of the compartments through the top wall of the incubator, and these tubes 14 and 15, besides providing for the necessary circulation of air, also serve as guides for the rod 16 which move vertically through them and extend below the incubator bottom, each rod being pivoted to an adjusting lever 20 which projects in front of the incubator case, so that it can be conveniently grasped, and at its rear end the lever is pivoted to a link 21 which is hinged to the case bottom, as shown at 22.

The lever 20 is slotted near its front end, as shown at 23, so as to receive the quadrant 24 which is fastened to the case bottom and depends therefrom, and the lever may be held at any necessary height on the quadrant by means of a thumb screw 25 which projects through the quadrant and into the lever. Any other suitable device may be used for holding the lever at the required height.

The portion of the rod 16 which projects through the chamber of the incubator is provided with a platform 17 which is braced on the under side, as shown at 18, and is adapted to support the removable egg trays 19.

The heating device is in the top of the incubator, and it will be seen that by means of the lever mechanism just described, the platforms may be adjusted at any desired height, and thus made to subject the eggs to the required heat. By having the several compartments and the adjusting devices for each of them, eggs may be introduced to the incubator at different times.

The incubator has, in the top, a heating tank 27 adapted to contain hot water or steam, this being introduced to the tank through a pipe 28 which extends longitudinally into the tank and throughout the greater part of its length, the pipe connecting at its outer end with a heater 29 which is supported on one end of the incubator, as described presently. The return of the circulation is effected through the pipes 30 which extend from one end of the tank 27 to the heater 29, the pipes entering the heater near its lower end.

The heater is provided with a removable cap 31 on top, to enable it to be conveniently filled, and the bottom of the heater is recessed or concaved, as shown at 32 in Fig. 4, so that it may present a large heating surface to the heat which rises from the chimney flue 33, which flue projects well up into the recess in the heater bottom. The flue 33 has a side flue 34 which projects upward above the heater top so as to provide for the necessary draft. The heater flues are held in suitable brackets 35 which are fastened to the end of the incubator.

The heater is arranged above a shelf 36 which is also fastened to the incubator, and on this shelf is adapted to rest a lamp 37, the lamp being arranged just beneath the flue 33 so that the whole heat from the chimney will pass upward through the flue 33 and be delivered against the heater bottom, as shown in Fig. 4.

Above the side flue 34 is a valve 38, which is adapted to close the top of said flue, and it will be seen that when the valve is closed, the effective heat will all be delivered beneath the heater so that the water in it will be quickly and efficiently heated, but if the water becomes too hot, the valve 38 is raised and this makes a side draft through the flue 34 which draws the hot air to one side, as illustrated in Fig. 5, and also draws cool air up through the recess 32 of the heater bottom and down through the upper part of the flue 33, and in this way the heater and its contents are quickly cooled to the necessary extent. I have shown a thermostat for operating the valve, this thermostatic arrangement being preferably constructed as follows:

The valve 38 is hung on the free end of the lever 39 which is fulcrumed on the top of the incubator, as shown at 40, and the lever is, behind its fulcrum, connected by a rod 41 which is adjustable, by means of a thumb nut 42, with a thermostat 43 which is arranged in the incubator, the rod 41 extending downward through a suitable tube $41^a$, as shown clearly in Fig. 1. The thermostat is secured to a bracket 44 and comprises two strips of metal, which strips are bound together and are of different degrees of expansibility, so that when the temperature grows relatively low, the thermostat curls upward so as to tilt the lever 39 and close the valve 38, thus utilizing the greatest amount of heat for heating the water in the heater, and when the temperature gets relatively high, the thermostat curls down, thus opening the valve and permitting the heat to escape in the manner already indicated. The cooler air is drawn into the incubator through the tubes 14, while the hot air escapes through the tubes 15 which may be provided with covers to assist in controlling the heat. In the lower part of the incubator are placed pans 45 containing water, the vapor of which gives the necessary moisture to the atmosphere and eggs.

It will be seen that the heating apparatus is very simple, that the incubator may be quickly built, that the trays may be regulated so as to be just the required distance from the heating tank and consequently heated to the necessary extent, and that as a result the incubator works very nicely.

Having thus described my invention, I claim as new and desire to secure by Letters Patent—

In an incubator, the combination with a case having in its top and bottom an opening leading from the egg chamber, of a vertical rod working in the said openings, the lower end of the rod extending to the outside of the case, a platform secured upon the rod in the egg chamber, a link pivoted to the bottom of the case, a lever to which the rod is pivoted, said lever being pivoted to the link and having its front end slotted, a quadrant secured to the case and projecting through the slot of the said lever, and means for clamping the lever to the quadrant, substantially as described.

NORMAN McASLAN.

Witnesses:
SAMUEL REYNOLDS,
CHARLES FREDERICK SCHRAM.

No. 691,837. Patented Jan. 28, 1902.

# V. S. BELL.

## INCUBATOR.

(Application filed Mar. 26, 1901.)

(No Model.) 2 Sheets—Sheet 1.

Fig. 1.

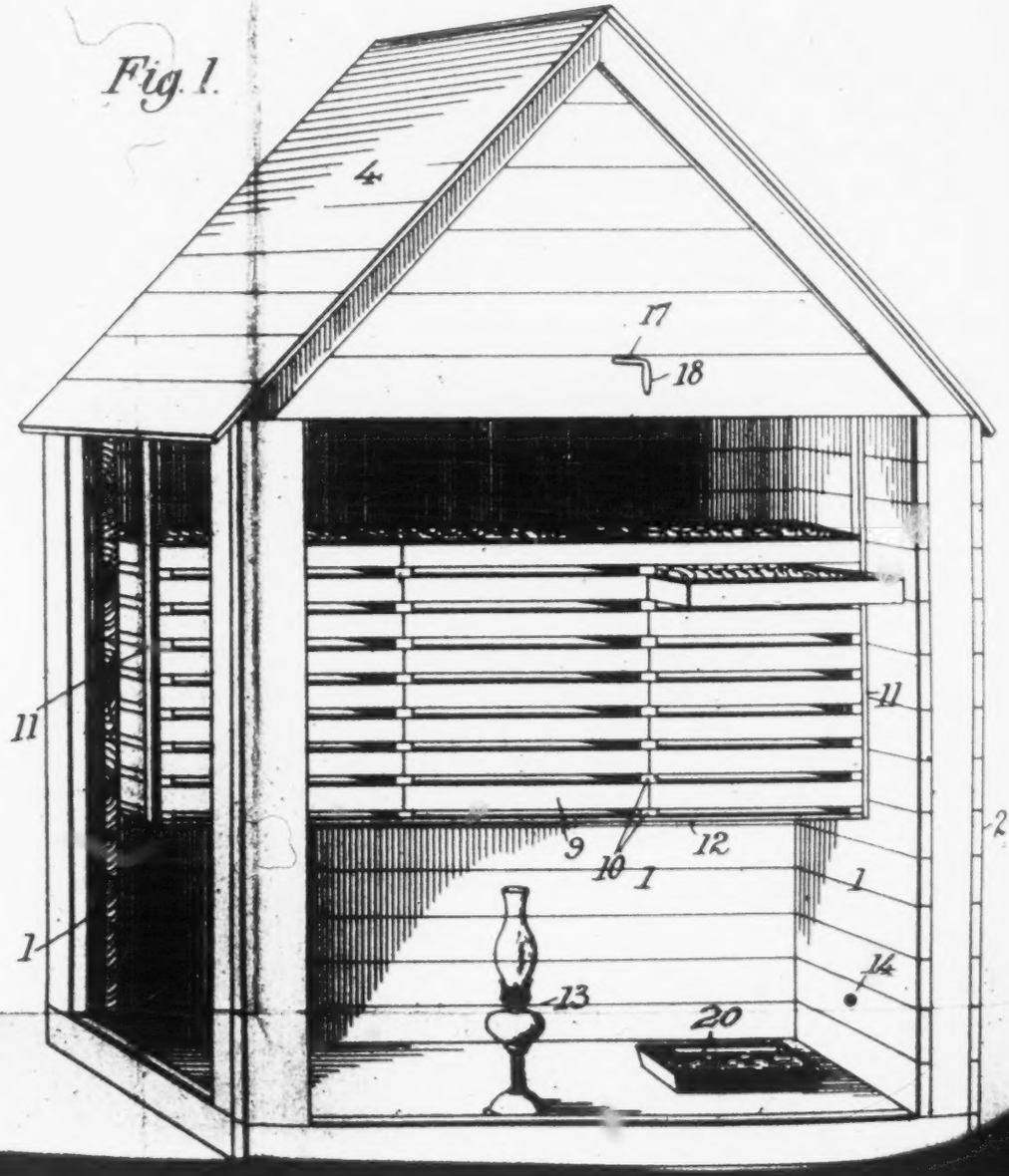
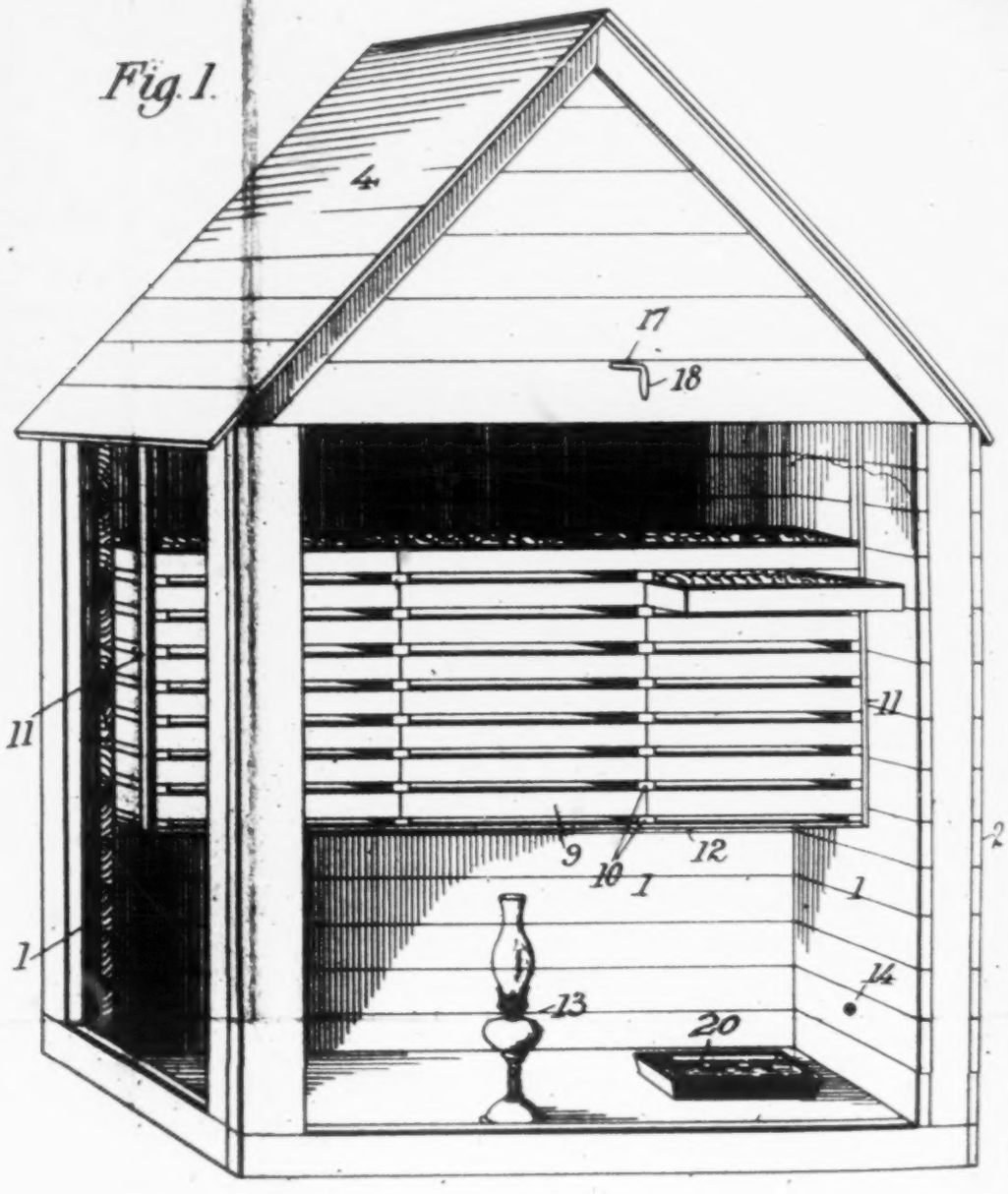


Fig. 1.




Witnesses:
J. E. Bowen
Kate Shepard

V. S. Bell Inventor
by C. A. Snow & Co.
Attorneys

973

No. 691,837. Patented Jan. 28, 1902.

V. S. BELL.

INCUBATOR.

(Application filed Mar. 26, 1901.)

(No Model.) 2 Sheets—Sheet 2.

Fig. 3.

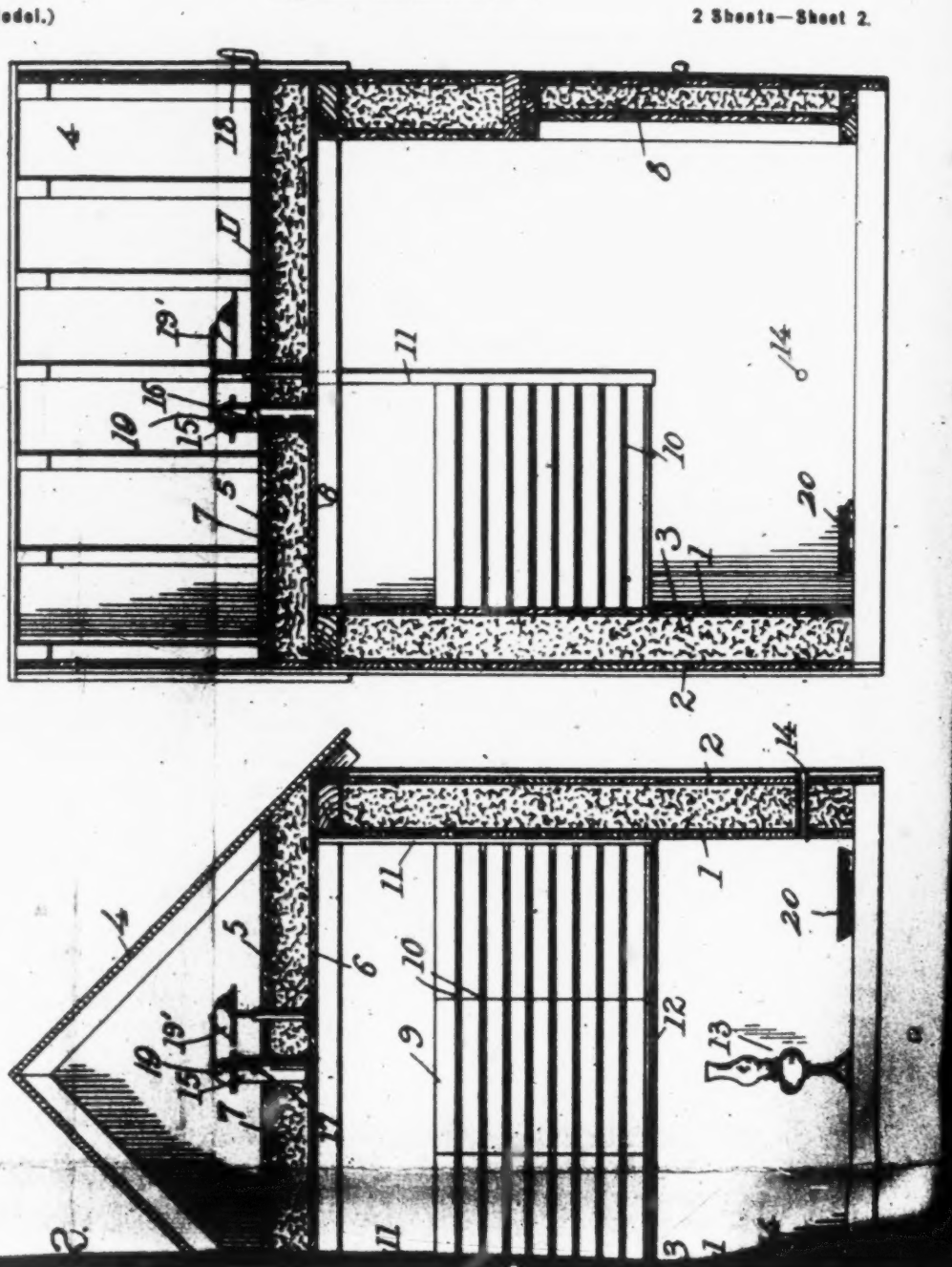


Fig. 3.




Fig. 2.




Witnesses:
J. F. Bowen
Hyde Shepard

V. S. Bell Inventor
by C. A. Snow & Co.
Attorneys

# UNITED STATES PATENT OFFICE.

VIRGIL S. BELL, OF HAYESVILLE, IOWA.

## INCUBATOR.

SPECIFICATION forming part of Letters Patent No. 691,837, dated January 28, 1902.

Application filed March 28, 1901. Serial No. 53,314. (No model.)

*To all whom it may concern:*

Be it known that I, VIRGIL S. BELL, a citizen of the United States, residing at Hayesville, in the county of Keokuk and State of Iowa, have invented a new and useful Incubator, of which the following is a specification.

This invention relates to incubators, and has for its object to provide an improved device of this character which is of great capacity, so that an attendant may have access to the interior thereof for examining the eggs and for any other purpose without exposing the eggs to the outside temperature. It is furthermore designed to provide for effectively ventilating the interior of the device, so as to preserve a proper temperature for the unhatched eggs and also for the recently-hatched chickens, and at the same time prevent the incubator from being chilled too rapidly.

With these and other objects in view the present invention consists in the combination and arrangement of parts, as will be hereinafter more fully described, shown in the accompanying drawings, and particularly pointed out in the appended claim, it being understood that changes in the form, proportion, size, and minor details may be made within the scope of the claim without departing from the spirit or sacrificing any of the advantages of the invention.

In the drawings, Figure 1 is a perspective view of the improved incubator, the front and one side being removed to show the interior thereof. Fig. 2 is a transverse sectional view [illegible]. Fig. 3 is a sectional view taken at [illegible] Fig. 2.

entirely housed by earth-filled walls. Access is had to the interior of the shed through a suitable dirt-filled door 8, (shown in Fig. 3 of the drawings,) whereby an attendant may enter the building to inspect the same without exposing the eggs to the outer air for any considerable time.

It is designed to support the eggs in trays 9, arranged in groups, the trays of each group being disposed one above the other, so that the ascending heat may affect all of the eggs. For the support of the trays there is provided a plurality of cleats or bars 10, which are arranged in vertical series and project outwardly from one side of the shed, to which they are connected in any suitable manner. It will be understood that the series of cleats are arranged at regular intervals, so as to slidably support the egg-trays, and the intermediate cleats are wide enough to support the adjacent edges of opposite trays; also, the outer ends of the opposite end series are braced by a hanger 11, pendent from the ceiling of the building, and the lowermost cleats are connected by a cross-bar 12, thus forming a strong and convenient frame for the support of the egg-trays. By this arrangement there is a space between the trays equal to the thickness of a cleat, and these openings or spaces will permit the chickens as they are hatched to escape from the trays and reach the floor of the shed; also, the cleats which support the trays permit the latter to be readily drawn outwardly or slid inwardly to remove or replace them.

The interior of the shed or building is heated by means of a lamp 13, placed upon the floor of the shed, and fresh air is supplied through pipes or inlet-passages 14

# INCUBATOR.

SPECIFICATION forming part of Letters Patent No. 691,837, dated January 28, 1902.

Application filed March 28, 1901. Serial No. 53,314. (No model.)

*To all whom it may concern:*

Be it known that I, VIRGIL S. BELL, a citizen of the United States, residing at Hayesville, in the county of Keokuk and State of Iowa, have invented a new and useful Incubator, of which the following is a specification.

This invention relates to incubators, and has for its object to provide an improved device of this character which is of great capacity, so that an attendant may have access to the interior thereof for examining the eggs and for any other purpose without exposing the eggs to the outside temperature. It is furthermore designed to provide for effectively ventilating the interior of the device, so as to preserve a proper temperature for the unhatched eggs and also for the recently-hatched chickens, and at the same time prevent the incubator from being chilled too rapidly.

With these and other objects in view the present invention consists in the combination and arrangement of parts, as will be hereinafter more fully described, shown in the accompanying drawings, and particularly pointed out in the appended claim, it being understood that changes in the form, proportion, size, and minor details may be made within the scope of the claim without departing from the spirit or sacrificing any of the advantages of the invention.

In the drawings, Figure 1 is a perspective view of the improved incubator, the front and one side being removed to show the interior thereof. Fig. 2 is a transverse sectional view thereof. Fig. 3 is a sectional view taken at right angles to Fig. 2.

Like characters of reference designate corresponding parts in all of the figures of the drawings.

In carrying out the invention there is built a house or shed having inner and outer walls 1 and 2, that are separated a suitable distance, preferably six inches, and this intervening space is filled with loose earth 3 to form a heat-non-conducting filling, which will maintain the interior air moist. The building is also provided with a peaked roof 4, the ceiling having top and bottom walls 5 and 6, between which is held the filling of earth 7, so that the interior of the building may be entirely housed by earth-filled walls. Access is had to the interior of the shed through a suitable dirt-filled door 8, (shown in Fig. 3 of the drawings,) whereby an attendant may enter the building to inspect the same without exposing the eggs to the outer air for any considerable time.

It is designed to support the eggs in trays 9, arranged in groups, the trays of each group being disposed one above the other, so that the ascending heat may affect all of the eggs. For the support of the trays there is provided a plurality of cleats or bars 10, which are arranged in vertical series and project outwardly from one side of the shed, to which they are connected in any suitable manner. It will be understood that the series of cleats are arranged at regular intervals, so as to slidably support the egg-trays, and the intermediate cleats are wide enough to support the adjacent edges of opposite trays; also, the outer ends of the opposite end series are braced by a hanger 11, pendent from the ceiling of the building, and the lowermost cleats are connected by a cross-bar 12, thus forming a strong and convenient frame for the support of the egg-trays. By this arrangement there is a space between the trays equal to the thickness of a cleat, and these openings or spaces will permit the chickens as they are hatched to escape from the trays and reach the floor of the shed; also, the cleats which support the trays permit the latter to be readily drawn outwardly or slid inwardly to remove or replace them.

The interior of the shed or building is heated by means of a lamp 13, placed upon the floor of the shed, and fresh air is supplied through pipes or inlet-passages 14, formed through the filled walls and adjacent to the bottom of the building, so that the incoming air may become properly heated before rising into contact with the eggs, which are supported at a suitable distance above the inlet-openings.

For ventilating the shed there is provided a hot-air-escape pipe or passage 15, extending through the ceiling of the shed and forming a communication between the interior thereof and the air-space above the ceiling. The peaked roof and the single extensions of the front and rear walls form an upper com-

partment and are provided with sufficient cracks to permit the hot air to escape from this upper chamber or compartment, which thereby partially confines the escaping hot air, causing the same to escape slowly and preventing the lower egg-receiving compartment from becoming suddenly chilled. A damper 16 is located within the escape-pipe between the ends thereof and at a point above the double ceiling, and it is operated by a rod or stem 17, located within the upper chamber or compartment and extending through the front wall of the same and provided with an exteriorly-arranged handle for enabling the damper to be readily controlled. The damper is normally open to permit the free upward passage of the heated air through the ventilating-passage; but the latter is normally closed at a point above the damper by means of an outer terminal valve 19, which is controlled by a thermostat 19', adapted to open the valve when the air in the incubator has reached a predetermined degree of temperature. The thermostat may be of any desired construction, and the purpose of the two valves and their particular arrangement is to permit the inner valve to be closed should it be desired to cut off the escape of the hot air when the outer valve has been opened by the thermostat.

The incubator is an outhouse or building, and when it is not in use as an incubator it may be employed for a variety of other purposes, such as a storehouse for various articles.

By reason of the fact that the loose earth is confined between opposite walls it will retain its moisture, and additional moisture may be supplied by a water-pan 20, placed upon the floor.

It will be understood that the filling between the inner and outer walls of the incubator may be sawdust, cinders, or other suitable material, and instead of an ordinary illuminating-lamp an oil or gasolene stove may be used, and, in fact, any preferred or particularly-adapted means of heating may be employed.

What is claimed is—

An incubator comprising a housing, a double-walled lower compartment provided with a double ceiling, said housing being also provided with an upper compartment having single walls and provided with cracks or apertures forming escape-openings for hot air, whereby the said upper compartment is adapted to confine partially the escaping hot air and cause the same to escape slowly to prevent the lower compartment from becoming chilled too quickly, a packing of heat-non-conducting material arranged at the walls and ceiling, egg-trays located in the lower compartment, a heat-generating device located below the trays, a short hot-air escape extending through the ceiling and permitting the hot air to pass from the lower compartment and terminating therein, a valve located at the upper end of the hot-air escape and provided with a thermostat to open it automatically, and a damper located in the hot-air escape at a point between the ceiling and the said valve and provided with means for operating it from the exterior to enable the escape of air to be cut off when the upper valve is open, substantially as and for the purpose described.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in the presence of two witnesses.

VIRGIL S. BELL.

Witnesses:
EDWARD DUREE,
A. C. JACOBS.

976

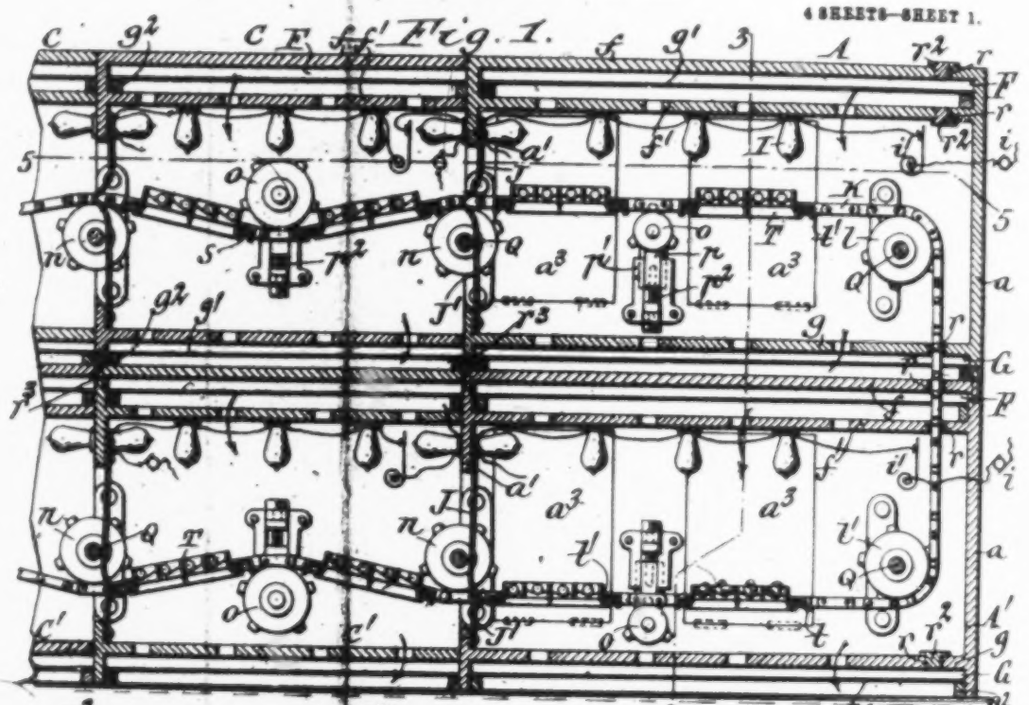
No. 798,697. PATENTED SEPT. 5, 1905.

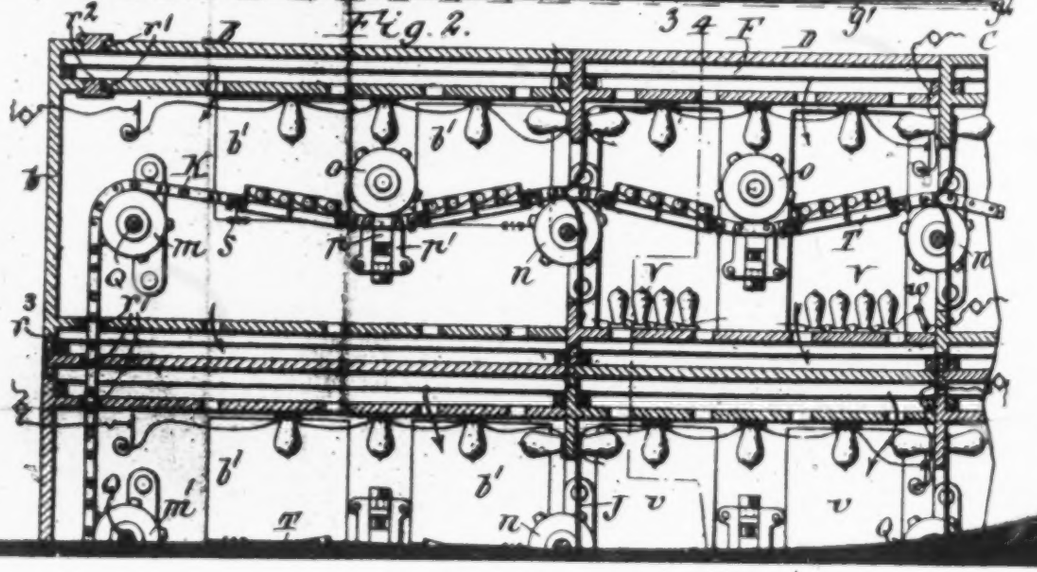
F. C. PERKINS.

INCUBATOR.

APPLICATION FILED DEC. 31, 1904.

4 SHEETS—SHEET 1.



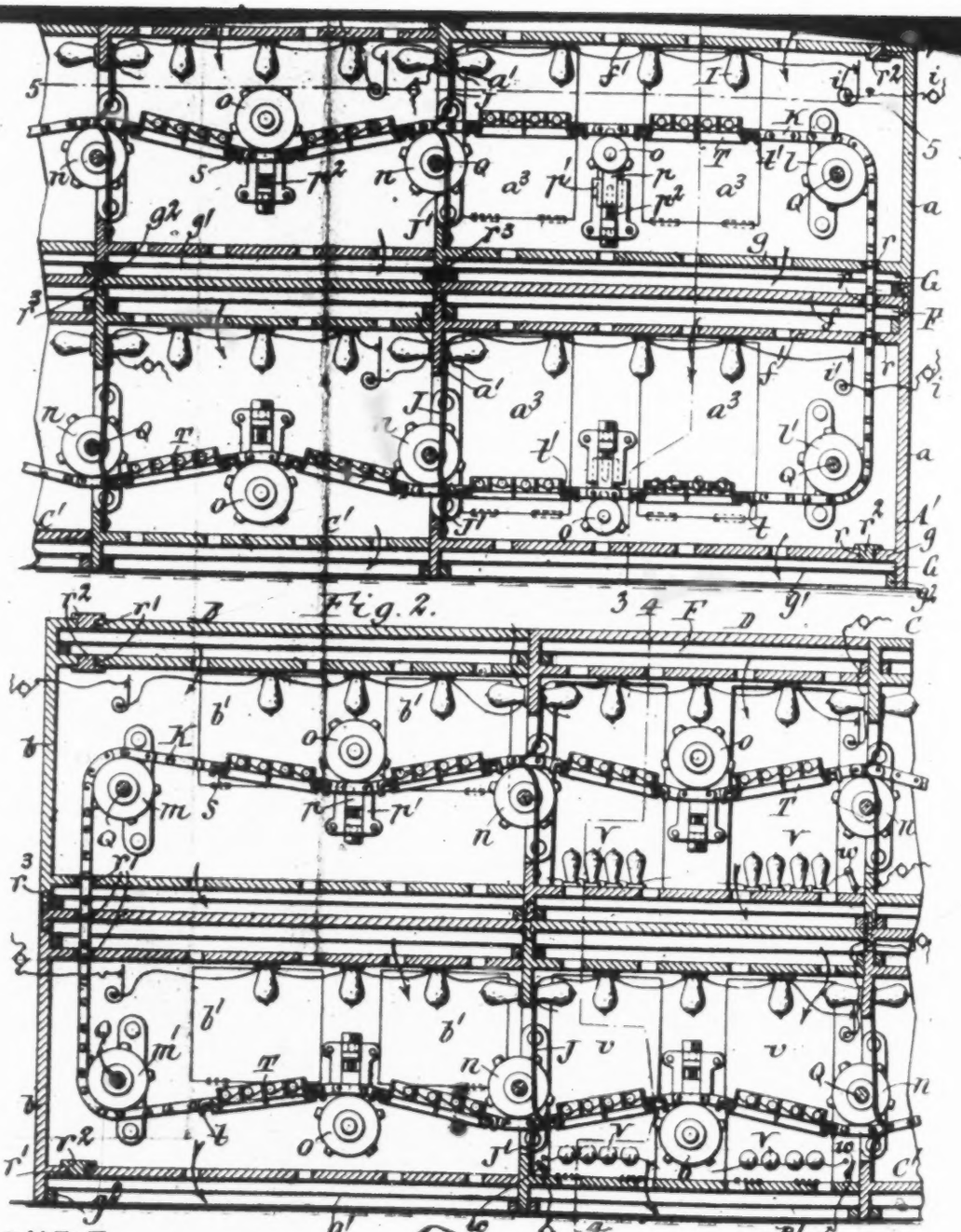


Fig. 2.

Witnesses:
Louis W. Gratz
Robert Weitzmeyer

Frank C. Perkins, Inventor
By Geyer & Popp
Attorneys.

977

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F. C. PERKINS.

INCUBATOR.

APPLICATION FILED DEC. 31, 1904.

4 SHEETS—SHEET 1.

Fig. 3.

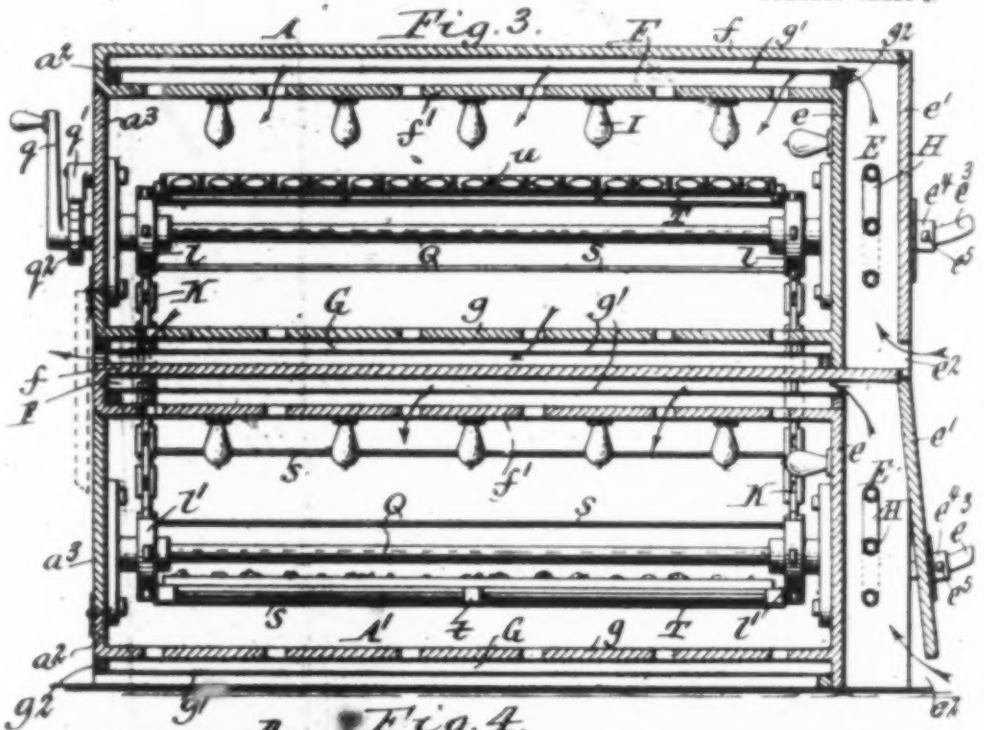
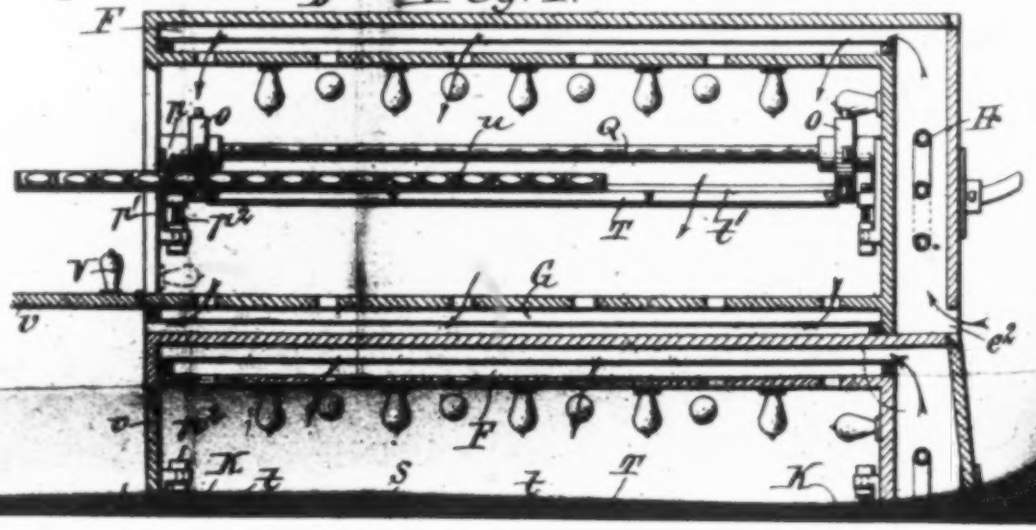
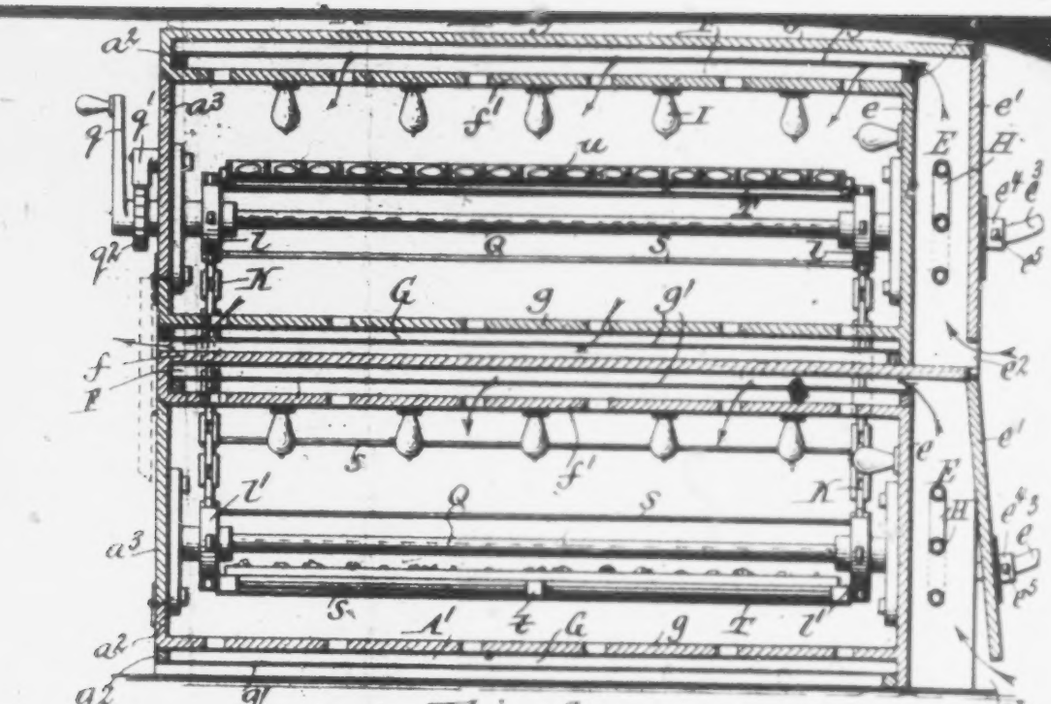
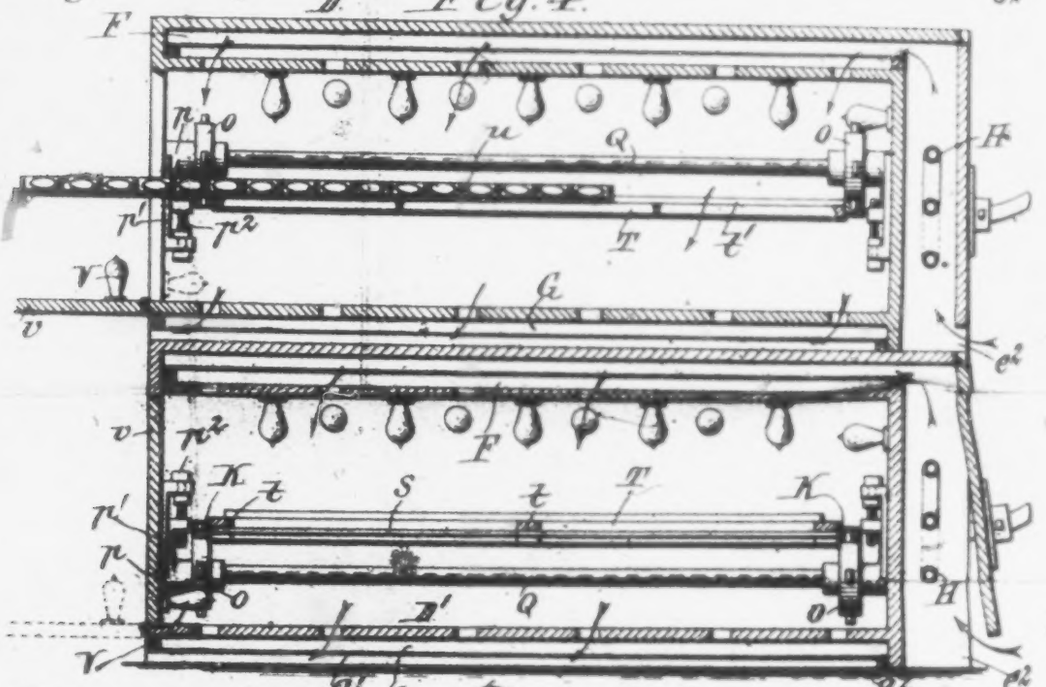


Fig. 4.





D. Fig. 4.



Witnesses:
Louis W. Gast
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No. 798,697. PATENTED SEPT. 5, 1905.

F. C. PERKINS.

INCUBATOR.

APPLICATION FILED DEC. 31, 1904.

4 SHEETS—SHEET 3.

Fig. 5.

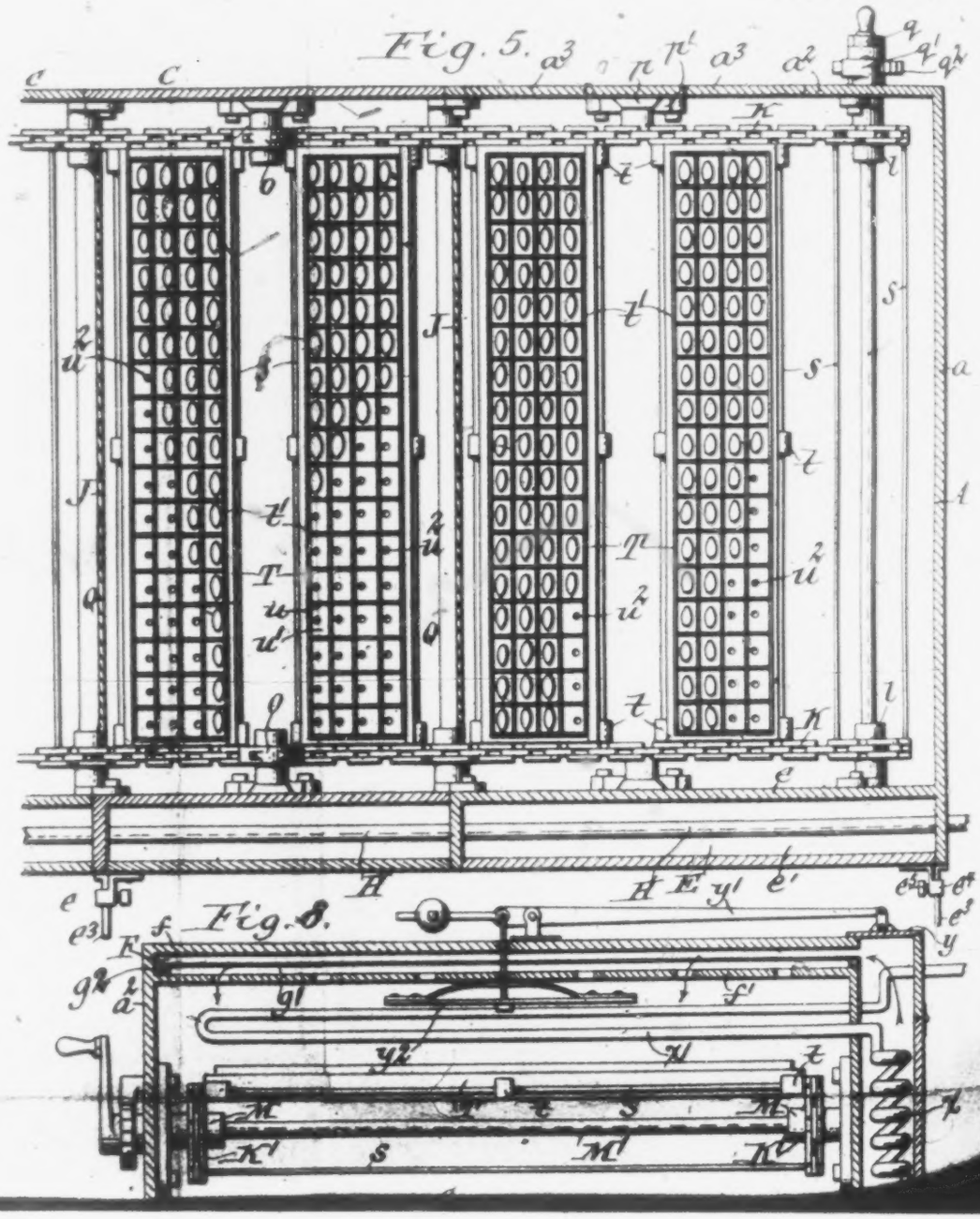

Fig. 8.

APPLICATION FILED DEC. 21, 1904.

4 SHEETS—SHEET 3.

Fig. 5.

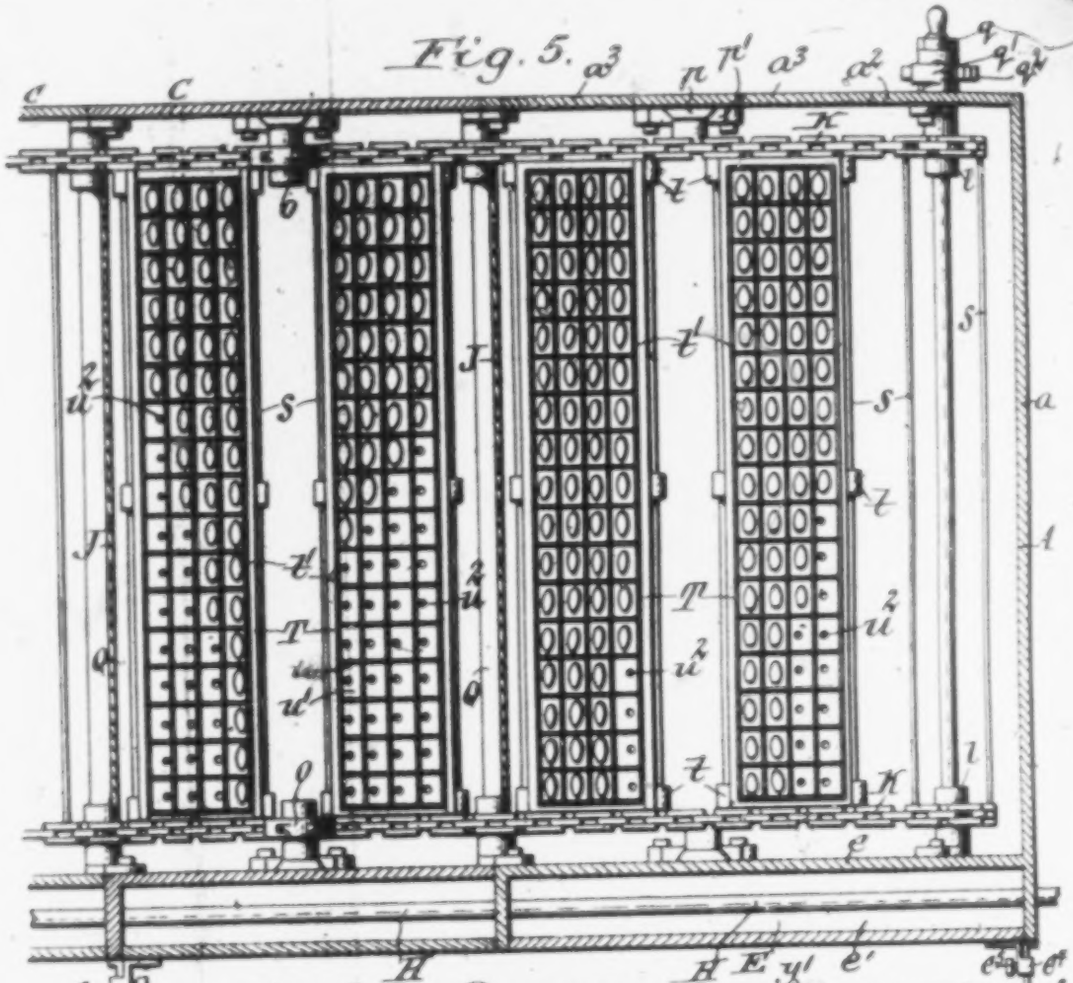

Fig. 8.

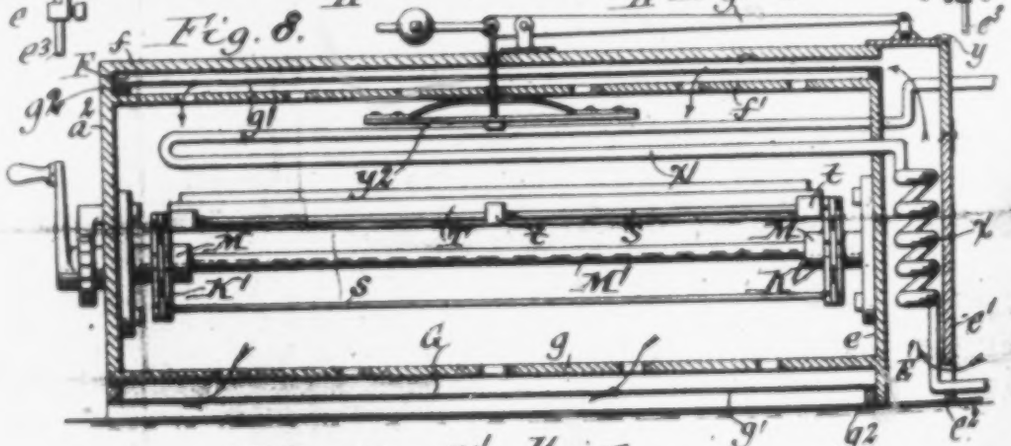

Fig. 7.

Witnesses:
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Attorneys

979

No. 798,697. PATENTED SEPT. 5, 1905.

F. C. PERKINS.

INCUBATOR.

APPLICATION FILED DEC. 31, 1904.

4 SHEETS—SHEET 4.

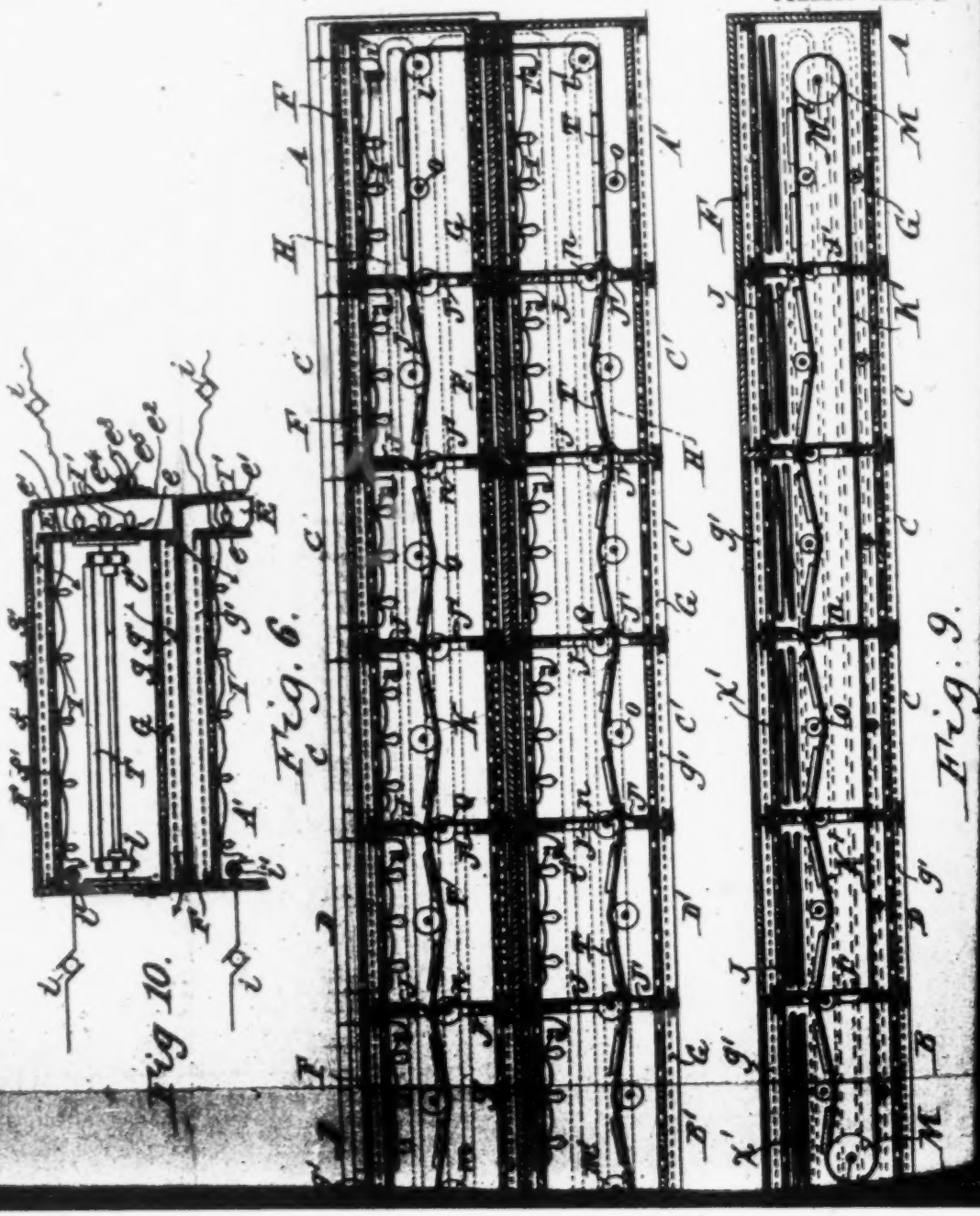


Fig. 10.

Fig. 6.

Fig. 9.

Witnesses:

Fig 10.

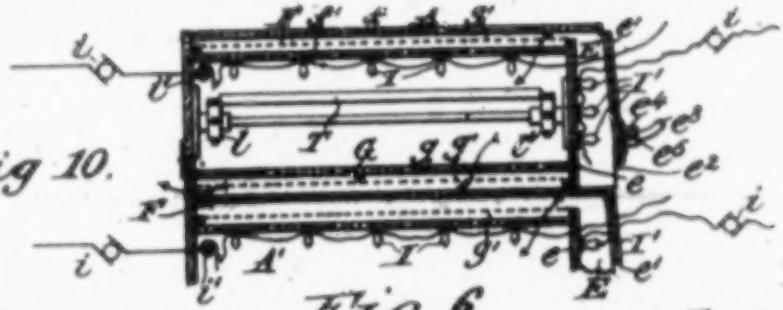


Fig. 6.

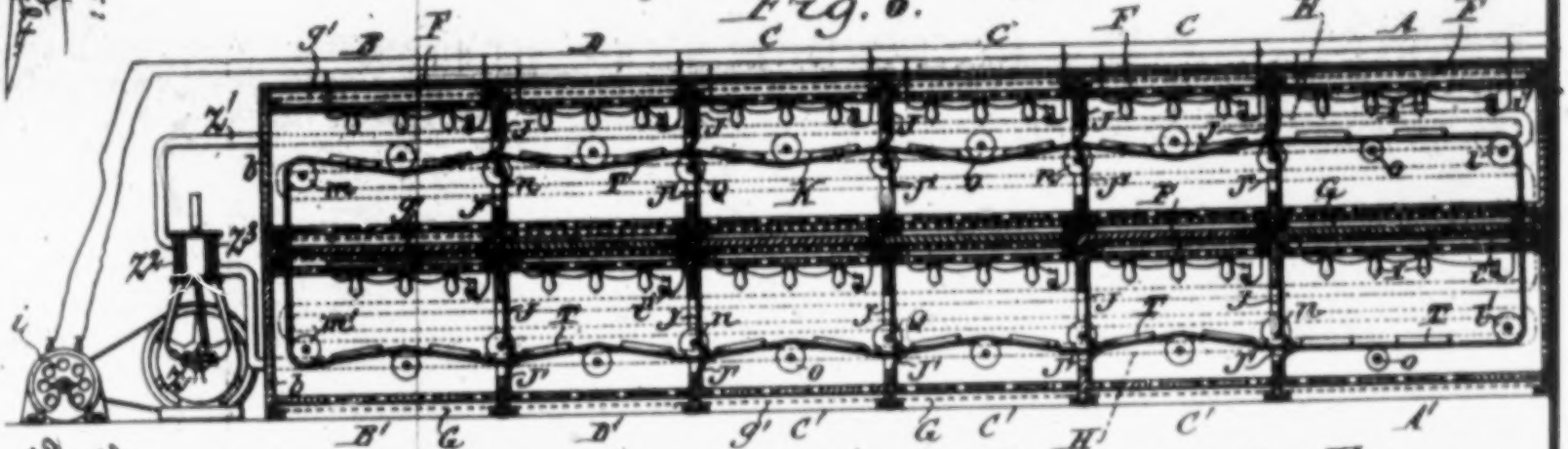
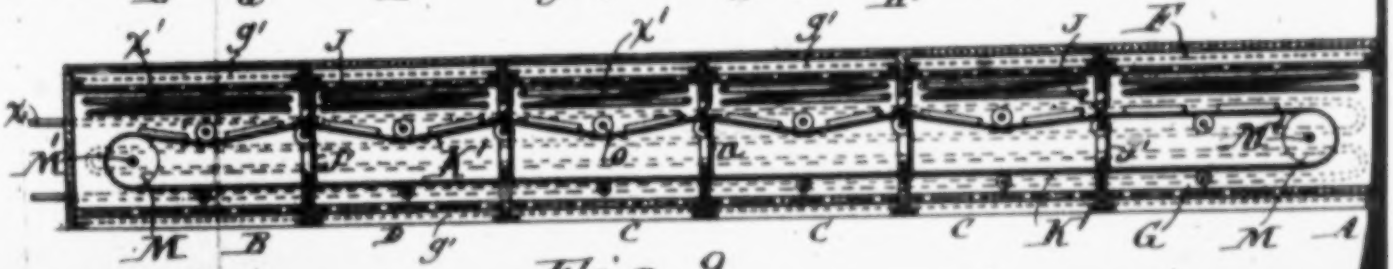


Fig. 9.



Frank C. Rattee
Inventor
by Eaton & Eaton
Attorneys

# UNITED STATES PATENT OFFICE.

FRANK CLINTON PERKINS, OF BUFFALO, NEW YORK.

## INCUBATOR.

No. 798,697. Specification of Letters Patent. Patented Sept. 5, 1905.

Application filed December 31, 1904. Serial No. 239,173.

*To all whom it may concern:*

Be it known that I, FRANK CLINTON PERKINS, a citizen of the United States, residing at Buffalo, in the county of Erie and State of New York, have invented new and useful Improvements in Incubators, of which the following is a specification.

This invention relates to an incubator which is more particularly designed for hatching eggs continuously on a large scale.

The objects of this invention are to produce an incubator of this character in which the egg-trays are moved intermittently from the time they enter the machine through a succession of compartments in each of which the temperature is regulated to suit the requirements for hatching the eggs at that particular time; to provide improved means whereby the eggs are automatically and periodically turned; to provide means for conveniently and expeditiously inspecting the eggs at the proper time; to so construct the incubator that the same can be built in sections, the number of which can be varied to suit the desired capacity of the machine, and to improve the incubator in several details of construction.

In the accompanying drawings, consisting of four sheets, Figure 1 is a vertical longitudinal section of the front end of the machine. Fig. 2 is a similar view of the rear end of the machine. Figs. 3 and 4 are vertical cross-sections in lines 3 3 and 4 4, Figs. 1 and 2, respectively. Fig. 5 is a horizontal section in line 5 5, Fig. 1. Fig. 6 is a diagrammatic view showing a plurality of incubator-sections assembled according to my invention. Fig. 7 is a fragmentary section of one of the egg-trays on an enlarged scale. Fig. 8 is a vertical transverse section showing a modified construction of my improved incubator. Fig. 9 is a vertical longitudinal section of the same. Fig. 10 is a cross-section showing a modification of the means for heating the incubator. Similar letters of reference indicate corresponding parts throughout the several views.

In general organization my improved [illegible] which an endless conveyer or carrier is employed, the upper part of which moves the trays successively in one direction through the upper series of compartments, while the lower part thereof carries the trays in the opposite direction through the lower series of compartments. The upper series of compartments is constructed in the form of separable sections and consists of a front end or receiving-section A, a rear end section B, and a plurality of intermediate sections C D, and the lower series is likewise constructed in the form of sections which are counterparts of those of the upper series and consist of a front or discharging section A′, a rear section B′, and a plurality of intermediate sections C′ D′. Each of the front end sections A A′ is provided with an outer or front end wall *a*, which is closed, an inner or rear end wall *a′*, which has a central opening, a front side wall *a²*, having openings which are normally closed by doors *a³*, a vertical fresh-air-inlet conduit E, formed between the inner and outer walls *e e′* on the rear side of this section, a horizontal air-distributing conduit F, connected at one end with the top of the inlet-conduit and formed between an imperforate top partition or wall *f* of this section and a perforated partition *f′*, arranged below the top, and a perforated horizontal bottom *g*, arranged above the lower end of this section and forming an outlet-conduit G for this chamber for the foul air, which outlet-conduit is closed at its rear side and opens into the atmosphere at its front side. The outer wall of the fresh-air-inlet conduit terminates at its lower end above the lower end of the section, so as to form an air-inlet port or opening *e²*. For the purpose of enabling the air-supply to be regulated the capacity of this inlet-conduit is varied, preferably by hinging the outer wall *e′* at its upper end to this section. This permits the lower end of this wall to be moved laterally, more or less, for increasing or decreasing the supply of air, as required. The air-regulating valve or damper, which is thus formed by the hinged wall *e′*, may be held in its adjusted position by any

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The objects of this invention are to produce an incubator of this character in which the egg-trays are moved intermittently from the time they enter the machine through a succession of compartments in each of which the temperature is regulated to suit the requirements for hatching the eggs at that particular time; to provide improved means whereby the eggs are automatically and periodically turned; to provide means for conveniently and expeditiously inspecting the eggs at the proper time; to so construct the incubator that the same can be built in sections, the number of which can be varied to suit the desired capacity of the machine, and to improve the incubator in several details of construction.

In the accompanying drawings, consisting of four sheets, Figure 1 is a vertical longitudinal section of the front end of the machine. Fig. 2 is a similar view of the rear end of the machine. Figs. 3 and 4 are vertical cross-sections in lines 3 3 and 4 4, Figs. 1 and 2, respectively. Fig. 5 is a horizontal section in line 5 5, Fig. 1. Fig. 6 is a diagrammatic view showing a plurality of incubator-sections assembled according to my invention. Fig. 7 is a fragmentary section of one of the egg-trays on an enlarged scale. Fig. 8 is a vertical transverse section showing a modified construction of my improved incubator. Fig. 9 is a vertical longitudinal section of the same. Fig. 10 is a cross-section showing a modification of the means for heating the incubator.

Similar letters of reference indicate corresponding parts throughout the several views.

In its general organization my improved incubator comprises an inclosing casing, which is divided into a number of compartments in each of which the egg-trays are confined about twenty-four hours, and a carrier whereby the trays are successively advanced from one compartment to another.

In the preferred form of the incubator, as shown in Figs. 1 to 6, two longitudinal series of incubating-chambers are employed, one series being arranged on top of the other, and an endless conveyer or carrier is employed, the upper part of which moves the trays successively in one direction through the upper series of compartments, while the lower part thereof carries the trays in the opposite direction through the lower series of compartments. The upper series of compartments is constructed in the form of separable sections and consists of a front end or receiving-section A, a rear end section B, and a plurality of intermediate sections C D, and the lower series is likewise constructed in the form of sections which are counterparts of those of the upper series and consist of a front or discharging section A′, a rear section B′, and a plurality of intermediate sections C′ D′. Each of the front end sections A A′ is provided with an outer or front end wall $a$, which is closed, an inner or rear end wall $a'$, which has a central opening, a front side wall $a^2$, having openings which are normally closed by doors $a^3$, a vertical fresh-air-inlet conduit E, formed between the inner and outer walls $e e'$ on the rear side of this section, a horizontal air-distributing-conduit F, connected at one end with the top of the inlet-conduit and formed between an imperforate top partition or wall $f$ of this section and a perforated partition $f'$, arranged below the top, and a perforated horizontal bottom $g$, arranged above the lower end of this section and forming an outlet-conduit G for this chamber for the foul air, which outlet-conduit is closed at its rear side and opens into the atmosphere at its front side. The outer wall of the fresh-air-inlet conduit terminates at its lower end above the lower end of the section, so as to form an air-inlet port or opening $e^2$. For the purpose of enabling the air-supply to be regulated the capacity of this inlet-conduit is varied, preferably by hinging the outer wall $e'$ at its upper end to this section. This permits the lower end of this wall to be moved laterally, more or less, for increasing or decreasing the supply of air, as required. The air-regulating valve or damper, which is thus formed by the hinged wall $e'$, may be held in its adjusted position by any suitable means, that shown in the drawings consisting of a segment $e^3$, arranged on the section and receiving a socket $e^4$ on the wall $e'$, and a set-screw $e^5$, arranged on the socket and bearing against the segment, as shown in Figs. 3, 4, and 5. The fresh air entering through the port $e^2$ at the lower end of the inlet-conduit passes upwardly through the same and from the upper end thereof into

the distributing-conduit, thence downwardly through the perforated lower wall thereof into the incubating-chamber of the section, thence through the perforated bottom into the outlet-conduit, and thence to the atmosphere, by which means fresh air is constantly supplied to this chamber. Within the inlet-conduit a continuous heater is arranged, consisting, for instance, of a coil H, through which hot water is circulated and which heats the incoming air as the same passes upwardly through the inlet-conduit. As the air passes from the distributing-conduit into the upper part of the incubating-chamber the same is further heated by a plurality of electric lamps I or other heater arranged in this part of the chamber. These lamps are connected with an electric generator the circuit of which contains a thermostatic switch *i'*, which is also arranged in the upper part of this chamber, as shown in Figs. 1 and 6. This switch is so adjusted that when the temperature of this chamber exceeds a certain degree the electric circuit of the lamps in the same will be broken, thereby causing the heating effect of these lamps to be arrested until the temperature has again been lowered to the required extent, when the thermostatic switch again reëstablishes the electric circuit containing the lamps I and causes heating of the chamber to be resumed. By dividing the heating system so that the heat is furnished partly by a continuous heater, such as the hot-water coil H, and partly by other heaters which are thermostatically controlled, such as the lamps in the upper part of the incubating-chamber, it is possible to control the temperature within the chamber with great nicety and without danger of at any time unduly cooling the eggs, as would be liable to occur if all of the lamps were extinguished or illuminated at one time.

When the incubator is installed in a locality where an electric current is not available from a general supply, it is preferable to heat the incubator by a combination of the electric-lamp system and the hot-water system, (shown in Figs. 1 to 6,) as follows: *i* represents a dynamo of any suitable construction which generates an electric current and which is connected with sets of lamps in the several [illegible] *e* represents an internal-combustion engine having its crank-shaft or other rotative part connected with the jacket and coil for heating the air in the inlets, thereby utilizing the heat developed by the engine for warming the incubator instead of wasting the same.

For the purpose of causing the air to enter and leave uniformly throughout the incubating-chambers and also to protect the eggs against drafts a screen or filter is preferably arranged in the horizontal air inlet and outlet of each chamber. Each of these screens preferably consists of a sheet *g'*, of burlap or other loosely-woven or porous fabric, arranged centrally within the respective air inlet or outlet conduit F G and secured to a frame *g''*, which is removably arranged in said conduit, as shown in Figs. 1, 2, 3, and 4.

The opening in the rear end wall of each chamber A A' is practically closed by a yielding curtain or shutter, which consists, preferably, of two flexible flaps or sections J J', which engage each other at their opposing curved ends, while their opposite ends are secured, respectively, to the adjacent upper and lower edges of the rear end wall of said chamber.

Each of the intermediate incubator-sections is constructed substantially like the front sections, and the same letters of reference are therefore used to indicate like parts. In the intermediate sections, however, no front end walls are employed, such as are present on the front ends of the front sections. The front ends of the air-inlet and distributing conduits of the intermediate sections are closed by abutting this end of each intermediate section against the rear end wall of the section in front of the same, as shown in Figs. 1, 5, and 6. Each of the rear incubator-sections is also constructed substantially like the front sections, the essential differences being that it has a rear wall *b*, which closes the rear end of the same, but no front end wall, the front ends of the air inlet, distributing, and outlet conduits of the same being closed by abutting the front end of this section against the rear end wall of the intermediate section in front of the same, as shown in Fig. 2. The front side walls of the rear sections B B' are provided with [illegible] normally closed by doors [illegible] rear sections are unprovided with any doors or curtains for separating the [illegible] thereof from the chamber in the [illegible] section, inasmuch as such [illegible]

conduit a continuous heater is arranged, consisting, for instance, of a coil H, through which hot water is circulated and which heats the incoming air as the same passes upwardly through the inlet-conduit. As the air passes from the distributing-conduit into the upper part of the incubating-chamber the same is further heated by a plurality of electric lamps I or other heater arranged in this part of the chamber. These lamps are connected with an electric generator the circuit of which contains a thermostatic switch $i''$, which is also arranged in the upper part of this chamber, as shown in Figs. 1 and 6. This switch is so adjusted that when the temperature of this chamber exceeds a certain degree the electric circuit of the lamps in the same will be broken, thereby causing the heating effect of these lamps to be arrested until the temperature has again been lowered to the required extent, when the thermostatic switch again reëstablishes the electric circuit containing the lamps I and causes heating of the chamber to be resumed. By dividing the heating system so that the heat is furnished partly by a continuous heater, such as the hot-water coil H, and partly by other heaters which are thermostatically controlled, such as the lamps in the upper part of the incubating-chamber, it is possible to control the temperature within the chamber with great nicety and without danger of at any time unduly cooling the eggs, as would be liable to occur if all of the lamps were extinguished or illuminated at one time.

When the incubator is installed in a locality where an electric current is not available from a general supply, it is preferable to heat the incubator by a combination of the electric-lamp system and the hot-water system, (shown in Figs. 1 to 6,) as follows: $i$ represents a dynamo of any suitable construction which generates an electric current and which is connected in multiple with the groups or sets of lamps I and thermostatic switches $i''$ in the several incubating-chambers. $z$ represents an internal-combustion engine having its crank-shaft operatively connected with the dynamo for driving the same. The heating-coil H, arranged in the air-inlets of the several incubating-chambers, has its upper and lower ends connected, respectively, with the upper and lower ends of the water-jacket $z^3$, which surrounds the cylinder $z'$ of the engine. While the power of the engine is driving the dynamo for illuminating the lamps and heating the air in the incubating-chambers, the water in the jacket is heated by the explosions and caused to circulate through the

against drafts a screen or filter is pre... arranged in the horizontal air inlet and ... let of each chamber. Each of these scr... preferably consists of a sheet $g'$, of burlap ... other loosely-woven or porous fabric, ... ranged centrally within the respective ... inlet or outlet conduit F G and secured to a frame $g''$, which is removably arranged in said conduit, as shown in Figs. 1, 2, 3, and 4.

The opening in the rear end wall of each chamber A A′ is practically closed by a yielding curtain or shutter, which consists, preferably, of two flexible flaps or sections J J′, which engage each other at their opposing curved ends, while their opposite ends are secured, respectively, to the adjacent upper and lower edges of the rear end wall of said chamber.

Each of the intermediate incubator-sections is constructed substantially like the front sections, and the same letters of reference are therefore used to indicate like parts. In the intermediate sections, however, no front end walls are employed, such as are present on the front ends of the front sections. The front ends of the air-inlet and distributing conduits of the intermediate sections are closed by abutting this end of each intermediate section against the rear end wall of the section in front of the same, as shown in Figs. 1, 5, and 6. Each of the rear incubator-sections is also constructed substantially like the front sections, the essential differences being that it has a rear wall $b$, which closes the rear end of the same, but no front end wall, the front ends of the air inlet, distributing, and outlet conduits of the same being closed by abutting the front end of this section against the rear end wall of the intermediate section in front of the same, as shown in Fig. 2. The front side walls of the rear sections B B′ are provided with openings which are normally closed by doors $b'$. The rear sections are unprovided with any shutters or curtains for separating the chamber thereof from the chamber in the preceding section, inasmuch as such shutters are ... at the rear end of the latter. When ... gitudinal series of incubator-sections ... arranged one above the other, the lo... of the air-outlet conduits are form... support upon which the lower ... while the lower side of the air-outl... of the upper series is formed by t... the sections of the lower series. I... the temperature of the air to whi... carrying trays are subjected must ... at different times during the inc...

riod, the thermostatic switch in each incubating-chamber which incloses each batch of eggs for one day is so adjusted as to maintain this chamber at the temperature required for the eggs at this particular stage of the incubating period. If desired, a sufficient number of sections may be employed in the upper and lower series so that complete incubation can be effected from the time the egg-carrying trays are introduced into one end of each series to the time they reach the other end of the same series. In this case the egg-trays can be introduced into the chamber of one end section through the opening thereof and the trays and chicks removed from the corresponding opposite end chamber through the opening thereof. By employing twenty-four sections in both the upper and the lower series the incubation of chickens can be thus effected. When space does not permit of building an incubator with a sufficient number of sections to complete incubation in one series, the same may be shortened by reducing the number of intermediate sections and retaining the front and rear end sections. When the machine is thus shortened, the incubation proceeds from the time the eggs are introduced into the upper front section to the time they are moved forwardly successively through the intermediate sections and reach the upper rear section, and then the egg-carrying trays are removed from the upper rear section and introduced into the chamber of the lower rear section and moved successively backward through the several intermediate sections. A machine having eleven such superposed pairs of sections would enable the incubation to be completed by one forward passage through the upper series and one rearward passage through the lower series. If a still smaller incubator is desired, the number of intermediate sections can be still further reduced, which, however, would necessitate more than one complete circuit of both series of chambers, the precise number of circuits depending upon the number of sections employed. When incubation is thus effected [illegible] in both the upper and lower series of [illegible], the egg-trays are transferred from [illegible] chamber upon reaching that end of a [illegible] placed in the companion end chamber [illegible] other series for continuing incubation [illegible] being possible owing to the open- [illegible] end chambers.

[illegible] shown in the drawings central parts of the chambers in the front, intermediate, and rear sections. Each pair of companion fixed sprocket-wheels is secured to a transverse shaft Q, which is journaled in bearings on the front and rear side walls of the respective chambers. Each of the front sections supports the shafts of one pair of front fixed sprocket-wheels and one pair of intermediate fixed sprocket-wheels at its front and rear ends, respectively, each intermediate section supports the shaft of a pair of intermediate fixed sprocket-wheels at its rear end, and each rear section supports the shaft of a pair of rear fixed wheels at its rear end. The adjustable wheels in each of the front, intermediate, and rear sections are each mounted on a vertically-movable slide $p$, which moves in a guideway $p'$ on the adjacent side wall of the respective chamber. Any suitable means may be employed for effecting this adjustment, that shown in the drawings consisting of a screw $p^3$, which is capable of rotation only in the guideway and works in a threaded opening in the slide. The fixed sprocket-wheels of the upper chambers are arranged horizontally in line, or substantially so, and like wheels of the lower series of chambers are also arranged horizontally in line. The adjustable wheels in the intermediate and front sections of both series of sections are arranged out of line or offset from the fixed wheels, so as to produce a deflection in the adjacent parts of the chains passing around the same. The adjustable wheels in the front chambers are so arranged that they support the chains horizontally between the fixed wheels thereof and prevent downward deflection or sagging of these parts of the chain belts. In the upper series of chambers the companion chain belts pass horizontally forward over the front fixed wheels $l$, and the first pair of adjustable wheels $o$ to the first pair of intermediate fixed wheels $n$, thence downwardly at an inclination and around the adjustable wheels $o$ in the first intermediate chamber, thence upwardly at an inclination and around the fixed wheels $n$ at the rear end of the first intermediate chamber, thence downwardly and upwardly around the fixed and adjustable wheels of the remaining intermediate sections, thence downwardly around the adjustable wheels in the upper rear section, and thence over and downwardly around the rearmost pair of fixed wheels $m$ in the rear chamber. That part of the chain belt in the lower series

introduced into one end of each series to the time they reach the other end of the same series. In this case the egg-trays can be introduced into the chamber of one end section through the opening thereof and the trays and chicks removed from the corresponding opposite end chamber through the opening thereof. By employing twenty-four sections in both the upper and the lower series the incubation of chickens can be thus effected. When space does not permit of building an incubator with a sufficient number of sections to complete incubation in one series, the same may be shortened by reducing the number of intermediate sections and retaining the front and rear end sections. When the machine is thus shortened, the incubation proceeds from the time the eggs are introduced into the upper front section to the time they are moved forwardly successively through the intermediate sections and reach the upper rear section, and then the egg-carrying trays are removed from the upper rear section and introduced into the chamber of the lower rear section and moved successively backward through the several intermediate sections. A machine having eleven such superposed pairs of sections would enable the incubation to be completed by one forward passage through the upper series and one rearward passage through the lower series. If a still smaller incubator is desired, the number of intermediate sections can be still further reduced, which, however, would necessitate more than one complete circuit of both series of chambers, the precise number of circuits depending upon the number of sections employed. When incubation is thus effected partly in both the upper and lower series of chambers, the egg-trays are transferred from one end chamber upon reaching that end of a series and placed in the companion end chamber of the other series for continuing incubation, this being possible owing to the openings in the end chambers.

The endless carrier shown in the drawings whereby the egg-trays are moved successively through the incubating-chambers comprises two chain belts K K, which are arranged side by side and which move parallel around fixed sprocket-wheels $l\ l'\ m\ m'$ at the front ends of the front chambers and in the rear ends of the rear chambers, also around intermediate fixed sprocket-wheels $n$, arranged at the joints between the several sections, also around adjustable sprocket-wheels $o$, arranged in the and rear ends, respectively, each intermediate section supports the shaft of a pair of intermediate fixed sprocket-wheels at its rear end, and each rear section supports the shaft of a pair of rear fixed wheels at its rear end. The adjustable wheels in each of the front, intermediate, and rear sections are each mounted on a vertically-movable slide $p$, which moves in a guideway $p'$ on the adjacent side wall of the respective chamber. Any suitable means may be employed for effecting this adjustment, that shown in the drawings consisting of a screw $p^2$, which is capable of rotation only in the guideway and works in a threaded opening in the slide. The fixed sprocket-wheels of the upper chambers are arranged horizontally in line, or substantially so, and like wheels of the lower series of chambers are also arranged horizontally in line. The adjustable wheels in the intermediate and front sections of both series of sections are arranged out of line or offset from the fixed wheels, so as to produce a deflection in the adjacent parts of the chains passing around the same. The adjustable wheels in the front chambers are so arranged that they support the chains horizontally between the fixed wheels thereof and prevent downward deflection or sagging of these parts of the chain belts. In the upper series of chambers the companion chain belts pass horizontally forward over the front fixed wheels $l$, and the first pair of adjustable wheels $o$ to the first pair of intermediate fixed wheels $n$, thence downwardly at an inclination and around the adjustable wheels $o$ in the first intermediate chamber, thence upwardly at an inclination and around the fixed wheels $n$ at the rear end of the first intermediate chamber, thence downwardly and upwardly around the fixed and adjustable wheels of the remaining intermediate sections, thence downwardly around the adjustable wheels in the upper rear section, and thence over and downwardly around the rearmost pair of fixed wheels $m$ in the rear chamber. That part of the chain belt in the lower series of chambers first passes underneath the fixed pair of wheels $m'$ in the rearmost chamber of this series, thence upwardly at an inclination over the adjustable wheels $o$ in this chamber, thence downwardly at an inclination underneath the fixed wheels $n$ at the rear end of the intermediate chamber next to the rearmost chamber, thence successively over the adjustable wheels and underneath the fixed wheels of the remaining intermediate sections, whereby

an alternate upward and downward deflection is produced in the belt, thence horizontally underneath the fixed wheels $n'$ $l'$, and over the adjustable wheel of the lower front section. In order to permit the chain belts to pass from the lower front section to the upper front section, the top and bottom partitions or walls of these chambers are provided in their front ends with openings $r$, which receive the vertical front portions of these belts. For the same purpose the rear sections of both series of chambers are provided in their horizontal top and bottom walls with openings $r'$ to permit the rear vertical portion of the chain belts to pass from the upper rear chamber to the lower rear chamber. Each of the end chambers is preferably provided with chain-openings in all of its horizontal members or walls, so as to permit of interchanging the chambers at one end of the incubator and enable either one to be used at the top or the bottom. Those belt-openings in any one of the end sections which are not in service for the passage of a belt are closed by means of plugs $r^3$, as shown in Figs. 1 and 2. In the upper front section the adjustable wheels $o$ are arranged substantially in line with the adjacent fixed wheels in order to adapt themselves to those portions of the belt which pass over the adjacent fixed wheels, and in the lower front section the adjustable wheels are arranged out of line with the adjacent fixed wheels, inasmuch as the corresponding parts of the chain belts pass around the under sides of the respective fixed wheels. The upper and lower front sections of the incubator are therefore identical in construction and the only change necessary to adapt either of them for use as an upper or lower front section is to place the adjustable wheels into the required position and insert plugs $r^3$ into those openings which are not required, according as to whether the section is to be used in the upper or lower series of the incubator. The upper and lower intermediate sections are also identical in construction, and the same is true with reference to the upper and lower rear sections, the only requirement for adapting any one of the intermediate and rear sections for use either as an upper or a lower section being the reversal of the adjustable wheels on the front and rear side walls of the respective chambers in order to adapt them to the course which the belt is required to take through the particular chamber. Any suitable means may be provided for holding

able intervals the two chain belts are connected by transverse supporting-rods $s$. T represents frames whereby the egg-carrying trays are supported upon these rods. Each of these frames is of skeleton form and provided on opposite sides with hooks or seats $t$, whereby the same may be detachably suspended upon a pair of adjacent supporting-rods $s$. On its upper side the frame is provided with transverse guideways $t$, which receive the tray and permit the same to be slid transversely off and on from the frame, but hold the tray against displacement in a direction lengthwise of the movement of the carrier. Each of the trays is preferably provided with a plurality of individual rectangular pockets $u$, each of which preferably has its bottom $u'$ constructed of flexible material and adapted to receive a single egg.

In the operation of the incubator the carrier is advanced the extent of one tray-space every twelve hours and a new frame and egg-laden tray are placed upon the carrier after the same has been thus advanced. Preparatory to the starting the incubation of a tray full of eggs a frame T is first placed upon a companion pair of supporting-rods in the upper front chamber and the egg-laden tray is then placed upon this frame. As the trays move forward horizontally during the first stage of incubation in the upper front chamber the eggs remain substantially in the center of their respective pockets. As the tray enters the first intermediate chamber and goes through the next half-day of incubation the same is tilted downwardly at its front end, causing the eggs to roll toward the front sides of the pockets. As the carrier is advanced another step during the next half-day of incubation the tray is tilted upwardly at its front or advancing end in the rear part of the first intermediate chamber, thereby causing the eggs to roll toward the rear or trailing side of the pockets thereof. Each of the trays is in like manner tilted in opposite directions during its passage through each of the intermediate and rear sections of the incubator, thereby automatically effecting the turning or shifting of the eggs periodically, as required, to produce proper hatching of the eggs. If the number of sections which are employed in the incubator is such that the incubation is not completed by the time the egg-trays pass in one direction from one end of the [illegible] to the other, the trays [illegible]

tical front portions of these belts. For the same purpose the rear sections of both series of chambers are provided in their horizontal top and bottom walls with openings $r'$ to permit the rear vertical portion of the chain belts to pass from the upper rear chamber to the lower rear chamber. Each of the end chambers is preferably provided with chain-openings in all of its horizontal members or walls, so as to permit of interchanging the chambers at one end of the incubator and enable either one to be used at the top or the bottom. Those belt-openings in any one of the end sections which are not in service for the passage of a belt are closed by means of plugs $r^3$, as shown in Figs. 1 and 2. In the upper front section the adjustable wheels $o$ are arranged substantially in line with the adjacent fixed wheels in order to adapt themselves to those portions of the belt which pass over the adjacent fixed wheels, and in the lower front section the adjustable wheels are arranged out of line with the adjacent fixed wheels, inasmuch as the corresponding parts of the chain belts pass around the under sides of the respective fixed wheels. The upper and lower front sections of the incubator are therefore identical in construction and the only change necessary to adapt either of them for use as an upper or lower front section is to place the adjustable wheels into the required position and insert plugs $r^3$ into those openings which are not required, according as to whether the section is to be used in the upper or lower series of the incubator. The upper and lower intermediate sections are also identical in construction, and the same is true with reference to the upper and lower rear sections, the only requirement for adapting any one of the intermediate and rear sections for use either as an upper or a lower section being the reversal of the adjustable wheels on the front and rear side walls of the respective chambers in order to adapt them to the course which the belt is required to take through the particular chamber. Any suitable means may be provided for holding the several sections in place after being assembled. For instance, this may be effected by dowling the sections together, as shown by dotted lines in Figs. 1 and 2.

The egg-trays may be removably supported upon the endless carrier in any suitable manner so as to follow the movements of the carrier. The preferred means for thus supporting the egg-trays on the carrier shown in the drawings are constructed as follows: At suitable points on the carrier are arranged transverse guideways $t$, which receive the tray and permit the same to be slid transversely off and on from the frame, but hold the tray against displacement in a direction lengthwise of the movement of the carrier. Each of the trays is preferably provided with a plurality of individual rectangular pockets $u$, each of which preferably has its bottom $u'$ constructed of flexible material and adapted to receive a single egg.

In the operation of the incubator the carrier is advanced the extent of one tray-space every twelve hours and a new frame and egg-laden tray are placed upon the carrier after the same has been thus advanced. Preparatory to the starting the incubation of a tray full of eggs a frame T is first placed upon a companion pair of supporting-rods in the upper front chamber and the egg-laden tray is then placed upon this frame. As the trays move forward horizontally during the first stage of incubation in the upper front chamber the eggs remain substantially in the center of their respective pockets. As the tray enters the first intermediate chamber and goes through the next half-day of incubation the same is tilted downwardly at its front end, causing the eggs to roll toward the front sides of the pockets. As the carrier is advanced another step during the next half-day of incubation the tray is tilted upwardly at its front or advancing end in the rear part of the first intermediate chamber, thereby causing the eggs to roll toward the rear or trailing side of the pockets thereof. Each of the trays is in like manner tilted in opposite directions during its passage through each of the intermediate and rear sections of the incubator, thereby automatically effecting the turning or shifting of the eggs periodically, as required, to produce proper hatching of the eggs. If the number of sections which are employed in the incubator is such that the incubation is not completed by the time the egg-trays pass in one direction from one end of a series to the other, the trays and their frames are removed from one end chamber and transferred to the adjacent end chamber of the other series for continuing the incubation in the opposite direction as long as may be necessary to hatch the eggs. As the trays and their frames pass from one chamber to another the flexible curtains are deflected by the frames and trays engaging with the same, and after the frames and trays clear the curtains the latter, owing to their resilience, again re-

same their normal position, in which their opposing ends engage each other and form a closure between the respective chambers on opposite sides of the same. To permit the curtains to be readily deflected by the frames and trays, the joint between the curtain-sections is arranged substantially in line with the frames and trays.

In order to permit of inspecting or candling the eggs, means are provided on one or more of the sections for this purpose, which are constructed as follows: As shown in Fig. 2, each of the rearmost intermediate sections D D′ of the incubator is provided in its front side wall, on opposite sides of the adjacent adjustable sprocket-wheel, with openings, which are normally closed by doors *v*. These doors are hinged at their lower ends to the adjacent front wall of the respective section and are provided at their lower ends with a series of electric testing or inspection lamps V. Each of the trays has the flexible bottoms of its pockets provided at one side thereof with an inspection or testing opening *u*′, over which an egg is adapted to rest when the tray is tilted toward that side of the tray. When it is desired to inspect the eggs in a tray, one or the other of the doors *v* is opened into a horizontal position, so that the lamps on the lower or inner part thereof project upwardly, as shown in the upper section of Figs. 2 and 4. Upon now withdrawing the tray from the respective frame each row of eggs may be brought successively over the lamps below the same, so that by looking at the eggs from the top the state of incubation of the same may be determined by the light of the lamps shining upwardly through the eggs. As many lamps are preferably employed as there are longitudinal rows of eggs, and these lamps are so arranged that each egg in a row is illuminated by an individual lamp, thus permitting the entire row of eggs to be inspected at one time without removing any of the eggs from the tray. By shifting the several rows of eggs successively over the testing-lamps all of the eggs in a tray can be inspected expeditiously, thereby reducing the time of exposure for inspection and increasing the output of the incubator in proportion, because the danger of spoiling eggs by inspection is reduced to a minimum. By providing two sets of lamps in the chamber of each inspection-section, which are arranged underneath the oppositely-tilted trays therein, the eggs [illegible] in the trays regardless of necting and disconnecting each set of testing-lamps with an electric circuit, so that the lamps may be turned on for use and turned out when not required. Although the two inspecting-sections are shown one above the other in front of the rearmost sections, these inspecting-sections can be placed wherever the size of the machine or other conditions may require.

Various means may be employed for moving the endless carrier forward, that shown in the drawings consisting of a hand-crank *q*, applied to the shaft of one pair of fixed sprocket-wheels, as shown in Figs. 3 and 5. The endless carrier may be held in place by means of a pawl *q*′, mounted on one of the sections and engaging with a ratchet-wheel *q*², which is mounted on the driving-shaft adjacent to the hand-crank *q*.

In the modification of the incubator shown in Figs. 8 and 9 the incubator is organized with a single series, means are provided for heating the incubating-chamber exclusively by hot water, and the carrier is so constructed that the same moves back and forth through the same series of sections. In this construction a heating coil or radiator is provided, one portion *x* of which is arranged vertically in the air-inlet conduit E′, while another portion *x*′ is arranged horizontally in the upper part of the incubating-chamber. The hot water entering at the lower end of the lower portion of the coil passes upwardly through the same, thence horizontally through the upper portion, and then is discharged to be again heated by any suitable means and again introduced into the lower portion. The regulation of the temperature in the incubating-chamber when using heating-coils in this manner is effected by opening and closing a vent-port in the top of the inlet-conduit by means of a valve or damper *y*. This movement of the damper is effected by means of a rock-lever *y*′, which is pivoted on top of the incubator and is connected with the damper and a thermostat *y*², arranged in the upper part of the incubating-chamber and connected with the rock-lever. The endless carrier for propelling the trays and their frames in this construction consists of two chains K′ K′, which move back and forth in the same series of chambers and pass around sprocket-wheels M, mounted on shafts M′, which are journaled in the chambers, the same being provided on the outside of the incubating-chamber with a hand-crank and a ratchet stop device similar to that shown in

sections for this purpose, which are constructed as follows: As shown in Fig. 2, each of the rearmost intermediate sections D D′ of the incubator is provided in its front side wall, on opposite sides of the adjacent adjustable sprocket-wheel, with openings, which are normally closed by doors *v*. These doors are hinged at their lower ends to the adjacent front wall of the respective section and are provided at their lower ends with a series of electric testing or inspection lamps V. Each of the trays has the flexible bottoms of its pockets provided at one side thereof with an inspection or testing opening $u^3$, over which an egg is adapted to rest when the tray is tilted toward that side of the tray. When it is desired to inspect the eggs in a tray, one or the other of the doors *v* is opened into a horizontal position, so that the lamps on the lower or inner part thereof project upwardly, as shown in the upper section of Figs. 2 and 4. Upon now withdrawing the tray from the respective frame each row of eggs may be brought successively over the lamps below the same, so that by looking at the eggs from the top the state of incubation of the same may be determined by the light of the lamps shining upwardly through the eggs. As many lamps are preferably employed as there are longitudinal rows of eggs, and these lamps are so arranged that each egg in a row is illuminated by an individual lamp, thus permitting the entire row of eggs to be inspected at one time without removing any of the eggs from the tray. By shifting the several rows of eggs successively over the testing-lamps all of the eggs in a tray can be inspected expeditiously, thereby reducing the time of exposure for inspection and increasing the output of the incubator in proportion, because the danger of spoiling eggs by inspection is reduced to a minimum. By providing two sets of lamps in the chamber of each inspecting-section, which are arranged underneath the oppositely-tilted trays therein, the eggs can be inspected in the trays regardless of whether the inspecting-openings $u^3$ are arranged in the advancing side of the pockets or in the trailing side thereof, because in one position or the other the eggs will be over openings of the pockets while passing through the inspecting-chamber, thereby avoiding the necessity of exercising care in placing the trays upon the frames of the endless carrier. A switch *w* is preferably employed for conning the endless carrier forward, that shown in the drawings consisting of a hand-crank *q*, applied to the shaft of one pair of fixed sprocket-wheels, as shown in Figs. 3 and 5. The endless carrier may be held in place by means of a pawl $q'$, mounted on one of the sections and engaging with a ratchet-wheel $q^2$, which is mounted on the driving-shaft adjacent to the hand-crank *q*.

In the modification of the incubator shown in Figs. 8 and 9 the incubator is organized with a single series, means are provided for heating the incubating-chamber exclusively by hot water, and the carrier is so constructed that the same moves back and forth through the same series of sections. In this construction a heating coil or radiator is provided, one portion *x* of which is arranged vertically in the air-inlet conduit E′, while another portion $x'$ is arranged horizontally in the upper part of the incubating-chamber. The hot water entering at the lower end of the lower portion of the coil passes upwardly through the same, thence horizontally through the upper portion, and then is discharged to be again heated by any suitable means and again introduced into the lower portion. The regulation of the temperature in the incubating-chamber when using heating-coils in this manner is effected by opening and closing a vent-port in the top of the inlet-conduit by means of a valve or damper *y*. This movement of the damper is effected by means of a rock-lever $y'$, which is pivoted on top of the incubator and is connected with the damper and a thermostat $y^2$, arranged in the upper part of the incubating-chamber and connected with the rock-lever. The endless carrier for propelling the trays and their frames in this construction consists of two chains K′ K′, which move back and forth in the same series of chambers and pass around sprocket-wheels M, mounted on shafts M′, which are journaled in the chambers, the same being provided on the outside of the incubating-chamber with a hand-crank and a ratchet stop device similar to that shown in Figs. 3 and 5 of the double-series incubator. In this construction of incubator only one part of the endless carrier is active, while the other part is idle.

If desired, the incubator may be heated solely by means of electricity, such an organization being shown in Fig. 10, in which intermittently-burning electric lamps I, controlled by thermostats $i'$, are arranged within the incu-

bating-chamber, and continuously-burning electric lamps l' are arranged in the air-supply conduits and permanently connected with the electric generator *i*.

It will be noted that the construction shown in Figs. 1 to 6 is in all respects like that shown in Fig. 10, except that the continuous heater in the air-inlet of the construction shown in Figs. 1 to 6 is composed of a hot-water coil, while in the construction shown in Fig. 10 the continuous heater consists of electric lamps, both constructions showing thermostatically-controlled electric heaters in the incubating-chamber.

My improved construction of incubator not only permits of hatching eggs continuously on a large scale with a smaller percentage of loss than has been possible heretofore, but also permits of manufacturing the same at a comparatively low cost on account of the identity of the sections. Furthermore, my improved construction of incubator enables the capacity of the incubator to be increased from time to time as necessitated by the increase in the business of the poultry raiser without requiring a reconstruction of the incubator and without causing any loss, inasmuch as there are no parts which have to be discarded when increasing the capacity of the incubator.

I claim as my invention—

1. An incubator comprising an incubating-chamber, and an upright air-supply conduit having an air-inlet at its lower end and communicating at its upper end with the top of said chamber, the outer wall of said conduit being adjustable laterally for varying the air-supply, substantially as set forth.

2. An incubator comprising an incubating-chamber and an upright air-supply conduit having an air-inlet at its lower end and communicating at its upper end with the top of said chamber, the outer wall of said conduit being hinged at its upper end so that its lower part is movable laterally for varying the air-supply and having means at its lower end for holding the same in its adjusted position, substantially as set forth.

3. An incubator comprising an incubating-chamber, an upright air-supply conduit having an air-inlet at its lower end and communicating at its upper end with the top of the incubating-chamber, and a heater arranged in said air-supply conduit, substantially as set forth.

4. An incubator comprising an incubating-chamber, an upright air-supply conduit having an air-inlet at its lower end and communicating at its upper end with the top of the incubating-chamber, a continuous heater arranged in said conduit, an electric heater arranged in the incubating-chamber, and a thermostatic switch arranged in the incubating-chamber and operating to connect and disconnect the heater in the incubating-chamber with an electric generator, substantially as set forth.

6. An incubator comprising a chamber and means for heating the incubator comprising partly an electric heater and partly a radiator, a dynamo connected with the electric heater, and an internal-combustion engine driving said dynamo and having a water-jacket around its cylinder which is connected with said radiator, substantially as set forth.

7. An incubator comprising a chamber, an air-inlet, and means for heating the incubator consisting of electric lamps and a thermostatic switch arranged in said chamber, a dynamo connected with said lamps and switch, a heating-coil arranged in said air-inlet, and an internal-combustion engine driving said dynamo and having a water-jacket around its cylinder which is connected with opposite ends of said coil, substantially as set forth.

8. An incubator comprising an incubating-chamber, an upright air-supply conduit arranged on one side of the chamber and having its outer wall terminating short of the lower end of the incubator forming an air-inlet, an air-distributing conduit arranged above the chamber and connected at one end with the upper end of the upright conduit and having perforations in its lower side for communication with the top of said chamber, and an air-discharge conduit arranged horizontally underneath the incubating-chamber and having perforations in its upper side for communication with the bottom of the incubating-chamber, substantially as set forth.

9. An incubator comprising an incubating-chamber, an upright air-supply conduit arranged on one side of the chamber, an air-distributing conduit arranged above the chamber and connected at one end with the upper end of said upright conduit, an air-discharge conduit arranged underneath said chamber and communicating at one end with the atmosphere, and screens arranged in said air-distributing and discharge chambers, substantially as set forth.

10. An incubator comprising a plurality of incubating-chambers, individual heaters for said chambers, and an egg-tray car-

Fig. 10 the contraband heater consists of electric lamps, both constructions showing thermostatically-controlled electric heaters in the incubating-chamber.

My improved construction of incubator not only permits of hatching eggs continuously on a large scale with a smaller percentage of loss than has been possible heretofore, but also permits of manufacturing the same at a comparatively low cost on account of the identity of the sections. Furthermore, my improved construction of incubator enables the capacity of the incubator to be increased from time to time as necessitated by the increase in the business of the poultry raiser without requiring a reconstruction of the incubator and without causing any loss, inasmuch as there are no parts which have to be discarded when increasing the capacity of the incubator.

I claim as my invention—

1. An incubator comprising an incubating-chamber, and an upright air-supply conduit having an air-inlet at its lower end and communicating at its upper end with the top of said chamber, the outer wall of said conduit being adjustable laterally for varying the air-supply, substantially as set forth.

2. An incubator comprising an incubating-chamber and an upright air-supply conduit having an air-inlet at its lower end and communicating at its upper end with the top of said chamber, the outer wall of said conduit being hinged at its upper end so that its lower part is movable laterally for varying the air-supply and having means at its lower end for holding the same in its adjusted position, substantially as set forth.

3. An incubator comprising an incubating-chamber, an upright air-supply conduit having an air-inlet at its lower end and communicating at its upper end with the top of the incubating-chamber, and a heater arranged in said air-supply conduit, substantially as set forth.

4. An incubator comprising an incubating-chamber, an upright air-supply conduit having an air-inlet at its lower end and communicating at its upper end with the top of the incubating-chamber, a heater arranged in said chamber, a heater arranged in said conduit, and means for controlling one of said heaters, substantially as set forth.

5. An incubator comprising an incubating-chamber, an upright air-supply conduit having an air-inlet at its lower end and communicating partly an electric heater and partly a [illegible] a dynamo connected with the electric heater and an internal-combustion engine driving said dynamo and having a water-jacket around its cylinder which is connected with said radiator, substantially as set forth.

7. An incubator comprising a chamber, an air-inlet, and means for heating the incubator consisting of electric lamps and a thermostatic switch arranged in said chamber, a dynamo connected with said lamps and switch, a heating-coil arranged in said air-inlet, and an internal-combustion engine driving said dynamo and having a water-jacket around its cylinder which is connected with opposite ends of said coil, substantially as set forth.

8. An incubator comprising an incubating-chamber, an upright air-supply conduit arranged on one side of the chamber and having its outer wall terminating short of the lower end of the incubator forming an air-inlet, an air-distributing conduit arranged above the chamber and connected at one end with the upper end of the upright conduit and having perforations in its lower side for communication with the top of said chamber, and an air-discharge conduit arranged horizontally underneath the incubating-chamber and having perforations in its upper side for communication with the bottom of the incubating-chamber, substantially as set forth.

9. An incubator comprising an incubating-chamber, an upright air-supply conduit arranged on one side of the chamber, an air-distributing conduit arranged above the chamber and connected at one end with the upper end of said upright conduit, an air-discharge conduit arranged underneath said chamber and communicating at one end with the atmosphere, and screens arranged in said air distributing and discharge chambers, substantially as set forth.

10. An incubator comprising a plurality of incubating-chambers, individual heaters [illegible] said chambers, and an egg-tray carrier movable successively through said chambers, substantially as set forth.

11. An incubator comprising a plurality of incubating-chambers, movable shutters [illegible] separate the chambers from each other, individual heaters for said chambers, and an egg-tray carrier movable successively through said chambers, substantially as set forth.

12. An incubator comprising a plura[illegible]

incubating-chambers, an egg-tray carrier movable successively through said chambers, individual heaters for said chambers, and shutters for separating said chambers from each other and each consisting of two flexible flaps which have their opposing ends engaging each other and arranged in the path of said tray-carrier, substantially as set forth.

13. An incubator comprising front and rear end sections and a plurality of intermediate sections, each section containing an incubating-chamber, and an egg-tray carrier movable successively through said chambers, substantially as set forth.

14. An incubator comprising a front section having front and rear end walls, a plurality of like intermediate sections each of which contains an incubating-chamber and is closed at its rear end by a rear end wall while its front end is closed by abutting either against the rear wall of the front section or the rear wall of the intermediate section in front of the same, and an egg-tray carrier movable successively through said chambers, substantially as set forth.

15. An incubator comprising a plurality of incubating-chambers, an egg-tray carrier movable successively through said chambers, and means for tilting said carrier and the trays supported thereby in opposite directions, substantially as set forth.

16. An incubator comprising a plurality of incubating-chambers, chain belts movable successively through said chambers, egg-trays carried by said belts, and wheels supporting said belts and arranged to tilt the belts and the trays supported thereby in opposite directions, substantially as set forth.

17. An incubator comprising a plurality of incubating-chambers, a pair of chain belts movable parallel through said chambers, egg-trays supported upon said belts, a plurality of fixed wheels around which said belts pass, and a plurality of adjustable wheels alternating with the fixed wheel and supporting the belts so that the same and the trays carried thereby tilt alternately in opposite directions, substantially as set forth.

18. An incubator comprising a front section, a rear section and a plurality of intermediate sections, each containing an incubat- [illegible] wheels mounted

19. An incubator comprising an incubating-chamber, a tray arranged in said chamber and having a plurality of individual egg-pockets, and means for tilting said tray alternately in opposite directions, substantially as set forth.

20. An incubator comprising an incubating-chamber, a tray arranged in said chamber and having a plurality of individual egg-pockets, each provided with a flexible bottom, and means for tilting said tray alternately in opposite directions, substantially as set forth.

21. An incubator comprising an incubating-chamber, a tray arranged in said chamber and having a plurality of individual egg-pockets each provided in its bottom with an opening over which the egg is adapted to rest, and an illuminating device arranged below said tray, substantially as set forth.

22. An incubator comprising an incubating-chamber, a tray arranged in said chamber and having a plurality of individual egg-pockets each provided near one side of its bottom with an opening over which an egg is adapted to rest, means for tilting the tray, and an illuminating device arranged below said tray, substantially as set forth.

23. An incubator comprising an incubating-chamber, a tray arranged in said chamber and having a plurality of individual egg-pockets each having a flexible bottom which is provided near one side with an opening over which an egg is adapted to rest, means for tilting the tray, and an illuminating device arranged below the tray, substantially as set forth.

24. An incubator comprising an incubating-chamber having an opening in its side which is normally closed by a door, a support arranged in said chamber, an egg-tray which is provided with openings underneath the eggs and which is movable from said support laterally through said opening in the chamber, and an illuminating device arranged to illuminate the space below the path of the egg-tray, substantially as set forth.

25. An incubator comprising an incubating-chamber having an opening in its side, a door normally closing said opening and hinged at its lower end to the chamber so that the same can be shifted into a horizontal position, a support arranged in said chamber, an egg-tray having openings in its bottom over which [illegible] adapted to rest and movable from

tray-carrier, substantially as set forth.

13. An incubator comprising front and rear end sections and a plurality of intermediate sections, each section containing an incubating-chamber, and an egg-tray carrier movable successively through said chambers, substantially as set forth.

14. An incubator comprising a front section having front and rear end walls, a plurality of like intermediate sections each of which contains an incubating-chamber and is closed at its rear end by a rear end wall while its front end is closed by abutting either against the rear wall of the front section or the rear wall of the intermediate section in front of the same, and an egg-tray carrier movable successively through said chambers, substantially as set forth.

15. An incubator comprising a plurality of incubating-chambers, an egg-tray carrier movable successively through said chambers, and means for tilting said carrier and the trays supported thereby in opposite directions, substantially as set forth.

16. An incubator comprising a plurality of incubating-chambers, chain belts movable successively through said chambers, egg-trays carried by said belts, and wheels supporting said belts and arranged to tilt the belts and the trays supported thereby in opposite directions, substantially as set forth.

17. An incubator comprising a plurality of incubating-chambers, a pair of chain belts movable parallel through said chambers, egg-trays supported upon said belts, a plurality of fixed wheels around which said belts pass, and a plurality of adjustable wheels alternating with the fixed wheel and supporting the belts so that the same and the trays carried thereby tilt alternately in opposite directions, substantially as set forth.

18. An incubator comprising a front section, a rear section and a plurality of intermediate sections, each containing an incubating-chamber, a pair of fixed wheels mounted on shafts journaled in bearings at the front and rear of the chamber in said front section, a pair of fixed wheels mounted on a shaft journaled in bearings at the rear of the chamber in said rear section, a pair of fixed wheels mounted on a shaft journaled at the rear of the chamber in each of said intermediate sections, a pair of adjustable wheels mounted in the central part of the chamber of each front, intermediate and rear section, chain belts passing around said wheels, and egg-trays supported on said belts, substantially as set

chamber, a tray arranged in said chamber and having a plurality of individual egg-pockets, each provided with a flexible bottom, and means for tilting said tray alternately in opposite directions, substantially as set forth.

21. An incubator comprising an incubating-chamber, a tray arranged in said chamber and having a plurality of individual egg-pockets each provided in its bottom with an opening over which the egg is adapted to rest, and an illuminating device arranged below said tray, substantially as set forth.

22. An incubator comprising an incubating-chamber, a tray arranged in said chamber and having a plurality of individual egg-pockets each provided near one side of its bottom with an opening over which an egg is adapted to rest, means for tilting the tray, and an illuminating device arranged below said tray, substantially as set forth.

23. An incubator comprising an incubating-chamber, a tray arranged in said chamber and having a plurality of individual egg-pockets each having a flexible bottom which is provided near one side with an opening over which an egg is adapted to rest, means for tilting the tray, and an illuminating device arranged below the tray, substantially as set forth.

24. An incubator comprising an incubating-chamber having an opening in its side which is normally closed by a door, a support arranged in said chamber, an egg-tray which is provided with openings underneath the eggs and which is movable from said support laterally through said opening in the chamber, and an illuminating device arranged to illuminate the space below the path of the egg-tray, substantially as set forth.

25. An incubator comprising an incubating-chamber having an opening in its side, a door normally closing said opening and hinged at its lower end to the chamber so that the same can be shifted into a horizontal position, a support arranged in said chamber, an egg-tray having openings in its bottom over which the eggs are adapted to rest and movable from said support laterally through said side opening of the chamber, and electric lamps arranged on the lower part of said door in position to be moved underneath the lateral path of the tray when the door is opened, substantially as set forth.

26. An incubator comprising a plurality of incubating-chambers, an endless carrier movable through said chambers, frames mounted on said carrier, and egg-trays removably supported on said frames, substantially as set forth.

27. An incubator comprising a plurality of incubating-chambers, a pair of endless chain belts movable parallel through said chambers, transverse supporting-rods connecting said belts at intervals, skeleton frames provided at their tops with transverse guideways and on opposite sides with hooks for engaging with two adjacent supporting-rods, and egg-trays supported in the ways of said frames, substantially as set forth.

28. An incubator comprising an upper and a lower horizontal series of incubating-chambers, an endless carrier constructed to move forwardly through one series of chambers and backwardly through the other series of chambers, and egg-trays adapted to be supported on said carrier, substantially as set forth.

29. An incubator comprising an upper series of sections and a lower series of sections, each section containing an incubating-chamber, an endless carrier consisting of chain belts which pass horizontally forward through one series of sections, thence vertically through the sections at one end of both series, thence horizontally backward through the other series of sections, and thence vertically through the sections at the other end of both series, and egg-trays supported on said carrier, substantially as set forth.

30. An incubator comprising a plurality of sections which are identical in construction and interchangeable and each of which contains an incubating-chamber, and means for supporting an egg-tray within the chamber, substantially as set forth.

31. An incubator comprising a plurality of sections each of which contains an incubating-chamber, means for supporting an egg-tray within said chamber, and an upright air-supply conduit having an air-inlet at its lower end and communicating at its upper end with the top of said chamber, the outer wall of said conduit being adjustable laterally for varying the air-supply, substantially as set forth.

32. An incubator comprising a plurality of sections some of which are identical in construction and interchangeable and each of which contains an incubating-chamber, means for supporting an egg-tray within the chamber, an upright air-supply conduit having an air-inlet at its lower end and communicating at its upper end with the top of the incubating-chamber, and a heater arranged in said air-supply conduit, substantially as set forth.

33. An incubator comprising a plurality of sections each of which contains an incubating-chamber, means for supporting an egg-tray within the chamber, an upright air-supply conduit having an air-inlet at its lower end and communicating at its upper end with the top of the incubating-chamber, a heater arranged in said chamber, a heater arranged in said conduit, and means for controlling one of said heaters and means for detachably connecting said sections, substantially as set forth.

Witness my hand this 28th day of December, 1904.

FRANK CLINTON PERKINS.

Witnesses:
THEO. L. POPP,
E. M. GRAHAM.

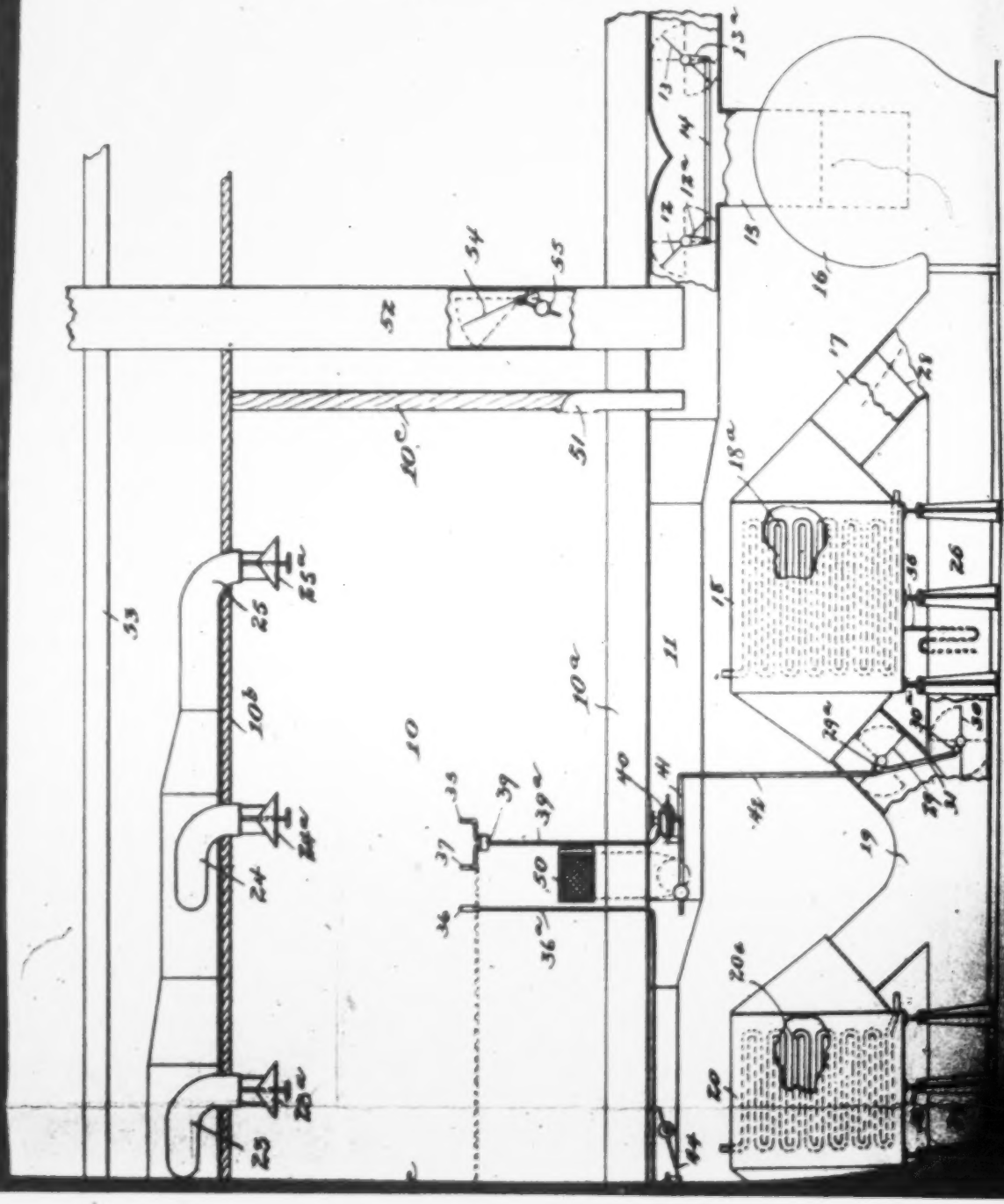
988

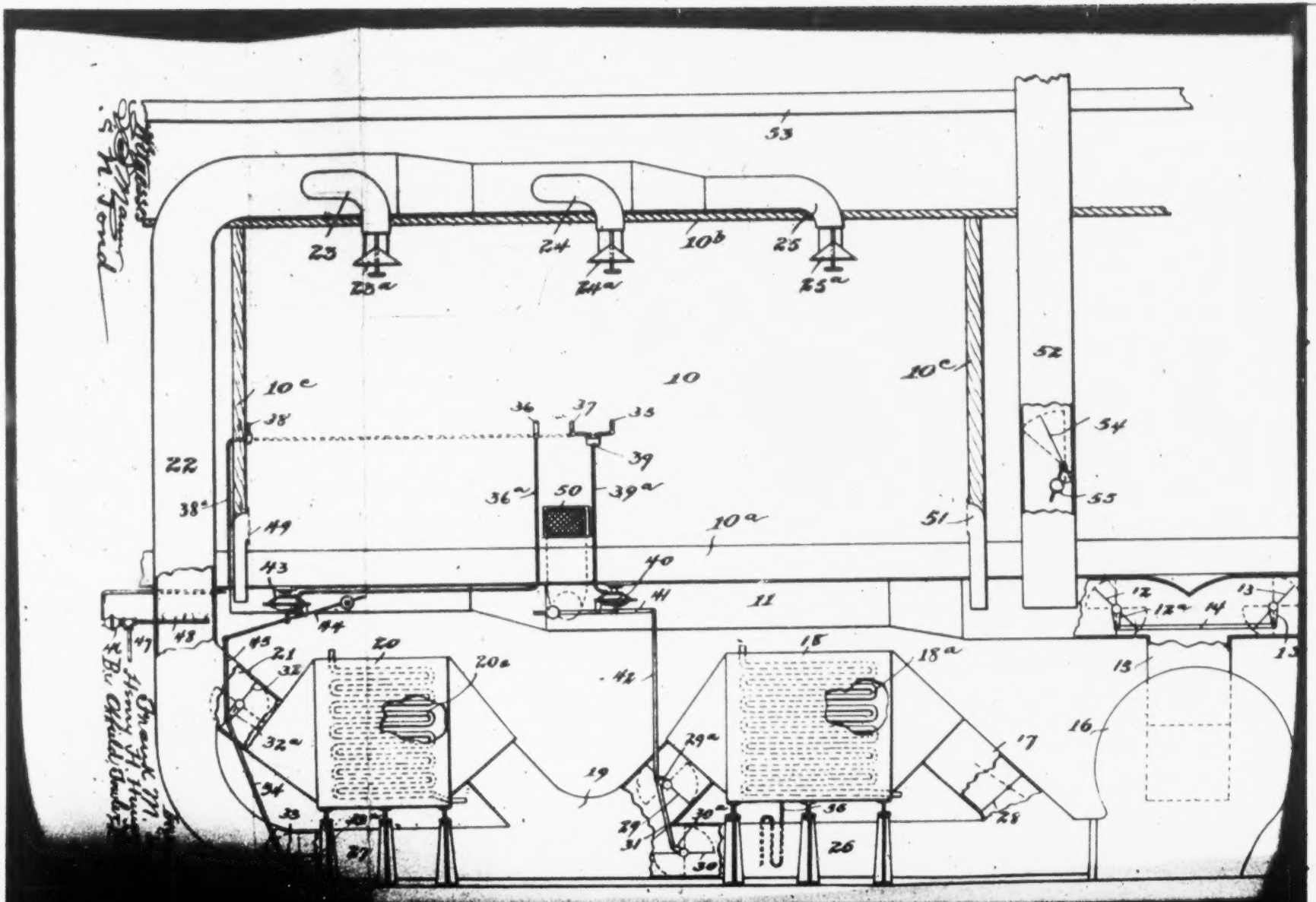
No. 843,909. PATENTED FEB. 12, 1907.

F. M. PETERS & H. H. HUNGERFORD.

ATMOSPHERE REGULATING SYSTEM.

APPLICATION FILED JUNE 8, 1903.





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# UNITED STATES PATENT OFFICE.

FRANK M. PETERS AND HENRY H. HUNGERFORD, OF CHICAGO, ILLINOIS; SAID HUNGERFORD ASSIGNOR TO SAID PETERS.

## ATMOSPHERE-REGULATING SYSTEM.

No. 843,909. Specification of Letters Patent. Patented Feb. 12, 1907.

Application filed June 8, 1903. Serial No. 160,620.

*To all whom it may concern:*

Be it known that we, FRANK M. PETERS and HENRY H. HUNGERFORD, citizens of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Atmosphere-Regulating Systems, of which the following is a specification.

Our invention relates to improvements in systems and devices for regulating atmospheric conditions, and more particularly to a system which includes as features thereof means for controlling and regulating the temperature, the humidity, and the ventilation, any or all, of the room or chamber subjected to the influence of the apparatus.

Experience has shown that in bakeries, breweries, and similar establishments certain processes of manufacture or certain steps therein require a more or less protracted maintenance of atmospheric conditions of substantial uniformity as regards temperature, humidity, and ventilation, or any or all of these conditions, while in school-houses, hospitals, theaters, and the like it is also desirable and advantageous, for a variety of reasons, to maintain substantial uniformity of such atmospheric conditions.

In carrying out our invention we employ means for maintaining a circulation of air through a room or chamber, which means are regulable to maintain a constant flow of fresh air, a flow of fresh air in association with air that has already passed through the apartment, or a continuous circulation and reuse of the same or substantially the same body of air, and in connection therewith we employ thermostatically and humidostatically controlled agencies for maintaining substantially constant a desired character or condition of the air circulated with reference to temperature and humidity.

which (the right-hand end as herein shown) leads to the external atmosphere, such end of the duct being controlled by a pair of dampers 12 and 13, the spindles of which are connected to operate in unison by arms $12^a$ and $13^a$, respectively, and a connecting-rod 14. The air-duct 11 between the damper-valves 12 and 13 is tapped by the intake-duct 15 of a fan or blower, (indicated at 16.) The discharge side of said blower has connected thereto a pipe-section 17, leading into a box or cylinder 18, containing a series of cooling-coils, (indicated at $18^a$,) whence a second curved pipe extension 19 leads into a second box or cylinder 20, containing a series of heating-coils, (indicated at $20^a$,) whence a short section 21 communicates with an air-conduit pipe 22, leading up behind one end of the apartment and above the ceiling thereof, said pipe terminating in a group of discharge branches 23, 24, and 25, depending through the ceiling, said discharge-pipes preferably being provided with deflectors $23^a$, $24^a$, and $25^a$, respectively, designed to regulate the volume of air discharged into the apartment and likewise to thoroughly disperse and diffuse the same.

Between the pipe-sections 17 and 19 is a by-pass 26 around the air-cooler 18, and between the sections 19 and the function of the sections 21 and 22 is a second by-pass 27 around the air-heater 20. In the pipe-section 17 is interposed a balanced valve or damper 28, which is normally closed except when the current of air is to be directed through the cooler 18, while the adjacent ends of the section 19 and by-pass 26 are provided with damper-valves 29 and 30, respectively, the spindles of which are connected to operate in unison by arms $29^a$ and $30^a$ and a connecting-link 31 and so set that when either is wide open the other is closed.

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Experience has shown that in bakeries, breweries, and similar establishments certain processes of manufacture or certain steps therein require a more or less protracted maintenance of atmospheric conditions of substantial uniformity as regards temperature, humidity, and ventilation, or any or all of these conditions, while in school-houses, hospitals, theaters, and the like it is also desirable and advantageous, for a variety of reasons, to maintain substantial uniformity of such atmospheric conditions.

In carrying out our invention we employ means for maintaining a circulation of air through a room or chamber, which means are regulable to maintain a constant flow of fresh air, a flow of fresh air in association with air that has already passed through the apartment, or a continuous circulation and reuse of the same or substantially the same body of air, and in connection therewith we employ thermostatically and humidostatically controlled agencies for maintaining substantially constant a desired character or condition of the air circulated with reference to its temperature and humidity.

Our invention is graphically shown in the accompanying drawing, which represents in diagrammatic form the various agencies employed in carrying out our invention and their relation to each other.

Referring to the drawing, 10 may represent a room or apartment designed to be controlled as to its atmospheric condition.

$10^a$ may represent the floor, $10^b$ the ceiling, and $10^c$ the side and end walls, of the apartment 10. Directly beneath the floor $10^a$ is an air return and vent duct 11, one end of which (the right-hand end as herein shown) leads to the external atmosphere, such end of the duct being controlled by a pair of dampers 12 and 13, the spindles of which are connected to operate in unison by arms $12^a$ and $13^a$, respectively, and a connecting-rod 14. The air-duct 11 between the damper-valves 12 and 13 is tapped by the intake-duct 15 of a fan or blower, (indicated at 16.) The discharge side of said blower has connected thereto a pipe-section 17, leading into a box or cylinder 18, containing a series of cooling-coils, (indicated at $18^a$,) whence a second curved pipe extension 19 leads into a second box or cylinder 20, containing a series of heating-coils, (indicated at $20^a$,) whence a short section 21 communicates with an air-conduit pipe 22, leading up behind one end of the apartment and above the ceiling thereof, said pipe terminating in a group of discharge branches 23, 24, and 25, depending through the ceiling, said discharge-pipes preferably being provided with deflectors $23^a$, $24^a$, and $25^a$, respectively, designed to regulate the volume of air discharged into the apartment and likewise to thoroughly disperse and diffuse the same.

Between the pipe-sections 17 and 19 is a by-pass 26 around the air-cooler 18, and between the sections 19 and the junction of the sections 21 and 22 is a second by-pass 27 around the air-heater 20. In the pipe-section 17 is interposed a balanced valve or damper 28, which is normally closed except when the current of air is to be directed through the cooler 18, while the adjacent ends of the section 19 and by-pass 26 are provided with damper-valves 29 and 30, respectively, the spindles of which are connected to operate in unison by arms $29^a$ and $30^a$ and a connecting-link 31 and so set that when either is wide open the other is closed. Similarly, in the pipe 21 and by-pass 27 are interposed damper-valves 32 and 33, respectively, the spindles of which are connected to operate in unison by arms $32^a$ and $33^a$ and a connecting-rod 34, said valves also being so set that when one is fully opened the other is closed.

In the apartment 10 are suitably located a pair of thermostats, the exposed parts of which are indicated at 35 and 36, and a pair of humidostats, the exposed parts of which are indicated at 3 and 38. The thermostat

35 and humidostat 37 may operate through a cumulative controller (indicated at 39) and a pressure-pipe 39ª on a diaphragm-chamber 40, the diaphragm of which latter is connected, through a counterweighted lever 41 and link 42, with the rod 31, connecting the damper-valves 29 and 30. The thermostat 36 is similarly connected, through its pressure-pipe 36ª, diaphragm-chamber 43, a counterweighted lever 44, and link 45, with the rod 34, connecting the damper-valves 32 and 33. The humidostat 38, through its pressure-pipe 38ª and valve 46, governs the admission of a steam-jet through a pipe 47 and nozzle 48, which enters the air-conduit at any suitable point between the air-blower and the chamber, said nozzle being herein shown as penetrating the lower end of the section 22 in such a manner as to discharge the steam-vapor directly into the current of air traveling therethrough.

The outlet for the air in the apartment 10 is provided for by one or more flues 49, 50, and 51, opening through the inner surfaces of the side and end walls of the apartment and leading thence through the floor into the return and vent duct 11. A vent-pipe 52 at its lower end taps the duct 11 inwardly of the innermost damper-valve 12, said pipe extending through the ceiling of the apartment and through the superposed roof of the building, (indicated at 53.) At any suitable point in the vent-pipe 52 is placed a balanced damper-valve 54, the counterweight 55 of which is so arranged as to normally maintain the valve closed, but permit it to open more or less, accordingly as the return-passage for the air to the fan is closed or opened. The cooler box or cylinder has tapping its bottom a trapped discharge-pipe 56 for a purpose hereinafter described.

The operation of our improved system of atmosphere regulation is substantially as follows: Assuming that the damper-valves 12 and 13 are so set as to close the valve 12 and open wide the valve 13 and the fan having been set in operation, a current of fresh air from outside is drawn into and forced through the fan. Assuming that this air is at or substantially at the predetermined temperature desired within the apartment 10 to which the thermostats have been set, the latter will so operate as to maintain closed the valves 29 drawn from outside through the fan exceeds the desired temperature limit of the chamber 10, the thermostat indicated at 35 promptly reverses the dampers 29 30, thus causing the current of air from the blower to pass through the cooler 18, the closing of the damper 30 creating sufficient pressure to open the balanced valve 28 and permit the flow of air past the same. If, on the other hand, the air from outside is cooler than is desired to be maintained in the chamber 10, the thermostat indicated at 36 acts to reverse the valves 32 and 33, thereby causing a current of air emerging from the by-pass 26 to travel through the heater 20. By means of the steam-pipe 47 and jet 48 a supply of aqueous vapor may be furnished to the current of air on its way to the apartment, and if the incoming air proves to be too dry or if its travel through the cooler 18 has extracted too much of the humidity therefrom the current of air can be moistened to the required degree by this means, which is controlled by the humidostat 38 acting, through its valve 46, to admit the supply of steam-vapor. If, on the other hand, the entering air contains an undue percentage of moisture, the humidostat 37 acts on the valves or dampers 29 and 30 to direct the air-current through the cooler 18, by which the moisture in the air is partially or wholly condensed, the deposited moisture being drained off through the pipe 56. Should this operation have the effect of too greatly cooling the air, the thermostat 36 will act at the same time upon the valves 32 and 33 to direct the dried cold current of air through the heater 20.

The thermostat 35 and humidostat 37 control independent valves that admit compressed air through the pipe 39ª to the diaphragm-chamber 40. If the conditions in the chamber 10 are too hot and too moist, both valves will open, admitting compressed air cumulatively to the diaphragm-chamber, and thereby shifting the dampers to direct the incoming air through the cooler, which is also a condenser and extracts the moisture. If the conditions in chamber 10 are too cold and too dry, neither the thermostat 35 nor the humidostat 37 will act, but these conditions will be regulated by the thermostat 36 and the humidostat 38. If the air in chamber 10 is too hot, but hygroscopic

per-valves 29 and 30. The thermostat 36 is similarly connected, throughits pressure-pipe $36^a$, diaphragm-chamber 43, a counter-weighted lever 44, and link 45, with the rod 34, connecting the damper-valves 32 and 33. The humidostat 38, through its pressure-pipe $38^a$ and valve 46, governs the admission of a steam-jet through a pipe 47 and nozzle 48, which enters the air-conduit at any suitable point between the air-blower and the chamber, said nozzle being herein shown as penetrating the lower end of the section 22 in such a manner as to discharge the steam-vapor directly into the current of air traveling therethrough.

The outlet for the air in the apartment 10 is provided for by one or more flues 49, 50, and 51, opening through the inner surfaces of the side and end walls of the apartment and leading thence through the floor into the return and vent duct 11. A vent-pipe 52 at its lower end taps the duct 11 inwardly of the innermost damper-valve 12, said pipe extending through the ceiling of the apartment and through the superposed roof of the building, (indicated at 53.) At any suitable point in the vent-pipe 52 is placed a balanced damper-valve 54, the counterweight 55 of which is so arranged as to normally maintain the valve closed, but permit it to open more or less, accordingly as the return-passage for the air to the fan is closed or opened. The cooler box or cylinder has tapping its bottom a trapped discharge-pipe 56 for a purpose hereinafter described.

The operation of our improved system of atmosphere regulation is substantially as follows: Assuming that the damper-valves 12 and 13 are so set as to close the valve 12 and open wide the valve 13 and the fan having been set in operation, a current of fresh air from outside is drawn into and forced through the fan. Assuming that this air is at or substantially at the predetermined temperature desired within the apartment 10 to which the thermostats have been set, the latter will so operate as to maintain closed the valves 29 and 32 and maintain open the valves 30 and 33, under which condition of the apparatus the current will flow directly through the by-passes 26 and 27, the section 22, and the discharge-sections 23, 24, and 25 into the chamber 10, the air passing thence through the discharge-flues 49, 50, and 51 into the return and vent duct 11, whence the current rises and passes off through the vent-pipe 52, the force of the current being sufficient to swing the balanced valve 54 open sufficiently to permit its passage. If, however, the air creating sufficient pressure to [illegible] anced valve 28 and permit the flow of [illegible] past the same. If, on the other hand, the air from outside is cooler than is desired to be maintained in the chamber 10, the thermostat indicated at 36 acts to reverse the valves 32 and 33, thereby causing a current of air emerging from the by-pass 26 to travel through the heater 20. By means of the steam-pipe 47 and jet 48 a supply of aqueous vapor may be furnished to the current of air on its way to the apartment, and if the incoming air proves to be too dry or if its travel through the cooler 18 has extracted too much of the humidity therefrom the current of air can be moistened to the required degree by this means, which is controlled by the humidostat 38 acting, through its valve 46, to admit the supply of steam-vapor. If, on the other hand, the entering air contains an undue percentage of moisture, the humidostat 37 acts on the valves or dampers 29 and 30 to direct the air-current through the cooler 18, by which the moisture in the air is partially or wholly condensed, the deposited moisture being drained off through the pipe 56. Should this operation have the effect of too greatly cooling the air, the thermostat 36 will act at the same time upon the valves 32 and 33 to direct the dried cold current of air through the heater 20.

The thermostat 35 and humidostat 37 control independent valves that admit compressed air through the pipe $39^a$ to the diaphragm-chamber 40. If the conditions in the chamber 10 are too hot and too moist, both valves will open, admitting compressed air cumulatively to the diaphragm-chamber, and thereby shifting the dampers to direct the incoming air through the cooler, which is also a condenser and extracts the moisture. If the conditions in chamber 10 are too cold and too dry, neither the thermostat 35 nor the humidostat 37 will act, but these conditions will be regulated by the thermostat 36 and the humidostat 38. If the air in chamber 10 is too hot, but hygroscopically correct, the thermostat 35 alone will act, the humidostat 37 being idle. On the other hand, if the air in the chamber 10 is too moist, but of correct temperature, the humidostat 37 will act and the thermostat 35 will be idle. It will thus be seen that the thermostat 35 and humidostat 37 control only the positive conditions of temperature and humidity, while the negative conditions are controlled by the other pair 36 and 38. In other words, one of the thermostats controls the rising and the other the falling of the temperature.

tively to a given point or degree, while, similarly, one of the humidostats controls the increase and the other the decrease of humidity relatively to a given point or percentage of the same. There is no interference in the action of these parts, since the humidostat of either pair will promptly act to correct any change of hygroscopic conditions incidentally created by the action of the thermostat of the other pair, and vice versa.

Under some conditions it is feasible and practicable in order to a void the necessity of either heating or cooling a stream of air constantly flowing from the outside to maintain a closed circulation of the air in the apartment, and this may readily be done by reversing the valves 12 and 13, to open the former and close the latter. In this case the air-current discharged from the apartment through the return-duct 11 is obviously reconveyed to the inlet-pipe of the blower and forced thence to and through the circulation-pipes and the apartment in a continuous and closed circuit. In this case, there being no pressure on the valve 54 in the vent 52, this valve automatically closes and prevents the induction of external air through said vent. In still other circumstances it may be feasible and desirable to maintain in part a closed circuit, permitting the introduction, however, of a certain proportion of external air. For this purpose the valves 12 and 13 may be set partially open to any desired extent or degree, as shown by the full lines in the drawing, in which case the blower draws in air from both the return and vent duct 11 and from the outer atmosphere, a certain portion of the air discharged from the apartment rising through the vent 52.

From the foregoing it will be seen that our invention provides a system of ventilation which not only maintains a constant and uniform flow of air through an apartment or storage-chamber and a consequent constant change of the air therein, but may also provide for the maintenance of constant and uniform thermal or hygroscopic conditions, or both, within said apartment, irrespective of such conditions prevailing outside. Obviously for the preservation of goods and materials susceptible to deterioration and injury through thermal and hygroscopic changes a such as our invention provides fills

the air-conduits, the heater, the cooler, the moistener, and other appurtenances of the system, might be employed without departing from the spirit or lessening the advantages of the invention, and hence we do not limit ourselves to the particular construction or relative arrangement of the elements of the system as shown and described, except to the extent indicated in specific claims.

We claim—

1. In an atmosphere-regulating system for rooms, the combination with an air-forcing device and a conduit extending from the discharge side thereof to and through a wall of the room, of an air-heater interposed in said conduit, a by-pass around said heater, an air-cooler also interposed in said conduit, a by-pass around said cooler, and separate thermostatically-operated means serving to control the passage of the air-current through said heater and cooler and their respective by-passes respectively according to the temperature in the room, one of said means operating when the maximum and the other when the minimum desired temperature is attained, substantially as described.

2. In an atmosphere-regulating system for rooms, the combination with an air-forcing device and a conduit extending from the discharge side thereof to and through a wall of the room, of an air-cooler interposed in said conduit, a by-pass around said cooler, an air-heater also interposed in said conduit, a by-pass around said heater, thermostatically-operated means serving to control the passage of the air-current through said heater and cooler and their by-passes according to the temperature in the room, and humidostatically-controlled means also serving to control the passage of the air-current through said cooler, substantially as described.

3. In an atmosphere-regulating system for rooms, the combination with an air-forcing device and a conduit extending from the discharge side thereof to and through a wall of the room, of a moisture-condenser interposed in said conduit, a by-pass around said condenser, and means operated by a humidostat located in the room serving to direct the air-current through said condenser or said by-pass, substantially as described.

4. In an atmosphere-regulating system for rooms, the combination with an air-forcing

of hygroscopic conditions incidentally created by the action of the thermostat of the other pair, and vice versa.

Under some conditions it is feasible and practicable in order to a void the necessity of either heating or cooling a stream of air constantly flowing from the outside to maintain a closed circulation of the air in the apartment, and this may readily be done by reversing the valves 12 and 13, to open the former and close the latter. In this case the air-current discharged from the apartment through the return-duct 11 is obviously reconveyed to the inlet-pipe of the blower and forced thence to and through the circulation-pipes and the apartment in a continuous and closed circuit. In this case, there being no pressure on the valve 54 in the vent 52, this valve automatically closes and prevents the induction of external air through said vent. In still other circumstances it may be feasible and desirable to maintain in part a closed circuit, permitting the introduction, however, of a certain proportion of external air. For this purpose the valves 12 and 13 may be set partially open to any desired extent or degree, as shown by the full lines in the drawing, in which case the blower draws in air from both the return and vent duct 11 and from the outer atmosphere, a certain portion of the air discharged from the apartment rising through the vent 52.

From the foregoing it will be seen that our invention provides a system of ventilation which not only maintains a constant and uniform flow of air through an apartment or storage-chamber and a consequent constant change of the air therein, but may also provide for the maintenance of constant and uniform thermal or hygroscopic conditions, or both, within said apartment, irrespective of such conditions prevailing outside. Obviously for the preservation of goods and materials susceptible to deterioration and injury through thermal and hygroscopic changes a system such as our invention provides fills an important place. Similarly, in hospitals, school-houses, theaters, or other inclosed places or apartments where a great number of persons may congregate or where it is essential for the comfort and health of human beings to have perfectly-controlled atmospheric conditions such conditions may be insured by the employment of the apparatus or system herein shown.

It is evident that numerous changes and modifications, particularly in the relative detail arrangement of the air-forcing device, or relative arrangement of the elements of the system as shown and described, except to the extent indicated in specific claims.

We claim—

1. In an atmosphere-regulating system for rooms, the combination with an air-forcing device and a conduit extending from the discharge side thereof to and through a wall of the room, of an air-heater interposed in said conduit, a by-pass around said heater, an air-cooler also interposed in said conduit, a by-pass around said cooler, and separate thermostatically-operated means serving to control the passage of the air-current through said heater and cooler and their respective by-passes respectively according to the temperature in the room, one of said means operating when the maximum and the other when the minimum desired temperature is attained, substantially as described.

2. In an atmosphere-regulating system for rooms, the combination with an air-forcing device and a conduit extending from the discharge side thereof to and through a wall of the room, of an air-cooler interposed in said conduit, a by-pass around said cooler, an air-heater also interposed in said conduit, a by-pass around said heater, thermostatically-operated means serving to control the passage of the air-current through said heater and cooler and their by-passes according to the temperature in the room, and humidostatically-controlled means also serving to control the passage of the air-current through said cooler, substantially as described.

3. In an atmosphere-regulating system for rooms, the combination with an air-forcing device and a conduit extending from the discharge side thereof to and through a wall of the room, of a moisture-condenser interposed in said conduit, a by-pass around said condenser, and means operated by a humidostat located in the room serving to direct the air-current through said condenser or said by-pass, substantially as described.

4. In an atmosphere-regulating system for rooms, the combination with an air-forcing device and a conduit extending from the discharge side thereof to and through a wall of the room, of a moisture-condenser interposed in said conduit, a by-pass around said condenser, means operated by a humidostat located in the room serving to direct the air-current through said condenser when the humidity of the air in the room exceeds a predetermined point, a vapor-injector interposed in said conduit, and means operated by the humidostat located in the room serving

to admit vapor through said injector when the humidity of the air in the room falls below a predetermined point, substantially as described.

5. In an atmosphere-regulating system designed to maintain substantially constant temperature and humidity conditions in a room, the combination with an air conduit or circuit in which the room is interposed, of an air-forcing device in said conduit, air heating and cooling means also interposed in said conduit, valve-controlled by-passes around the same, thermostatically-controlled means for controlling the engagement of the circulating current with said heating and cooling means, and humidostatically-controlled means for injecting steam or other vapor into the circulating air-current, substantially as described.

6. In an atmosphere-regulating system designed to maintain substantially constant temperature and humidity conditions in a room, as well as to control the ventilation thereof, the combination with an air conduit or circuit in which the room is interposed, of an air-forcing device in said conduit, air heating and cooling means also interposed in said circuit, valve-controlled by-passes around the same, thermostatically-controlled means for controlling the engagement of the circulating current with said heating and cooling means, humidostatically-controlled means for controlling the engagement of the circulating current with said cooling means, and other humidostatically-controlled means for extracting moisture from said air-current, air inlet and outlet passages also communicating with said circuit, and means whereby the circuit may be maintained open, closed, or partially opened and closed relatively to the outer air, substantially as described.

7. In an atmosphere-regulating system for rooms, the combination with an air conduit or circuit in which the room is interposed, of an air-forcing device in said circuit, the intake member of said air-forcing device having means whereby it may be connected wholly with the circuit or wholly with the external atmosphere, or partially with both, air heating and cooling means interposed in said circuit, valve-controlled by-passes around the same, separate thermostatically-controlled means for controlling the engagement of the circulating current with said heating and cooling means respectively, and a vent-pipe tapping said conduit between the room and the air-forcing device, substantially as described.

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Witnesses:
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